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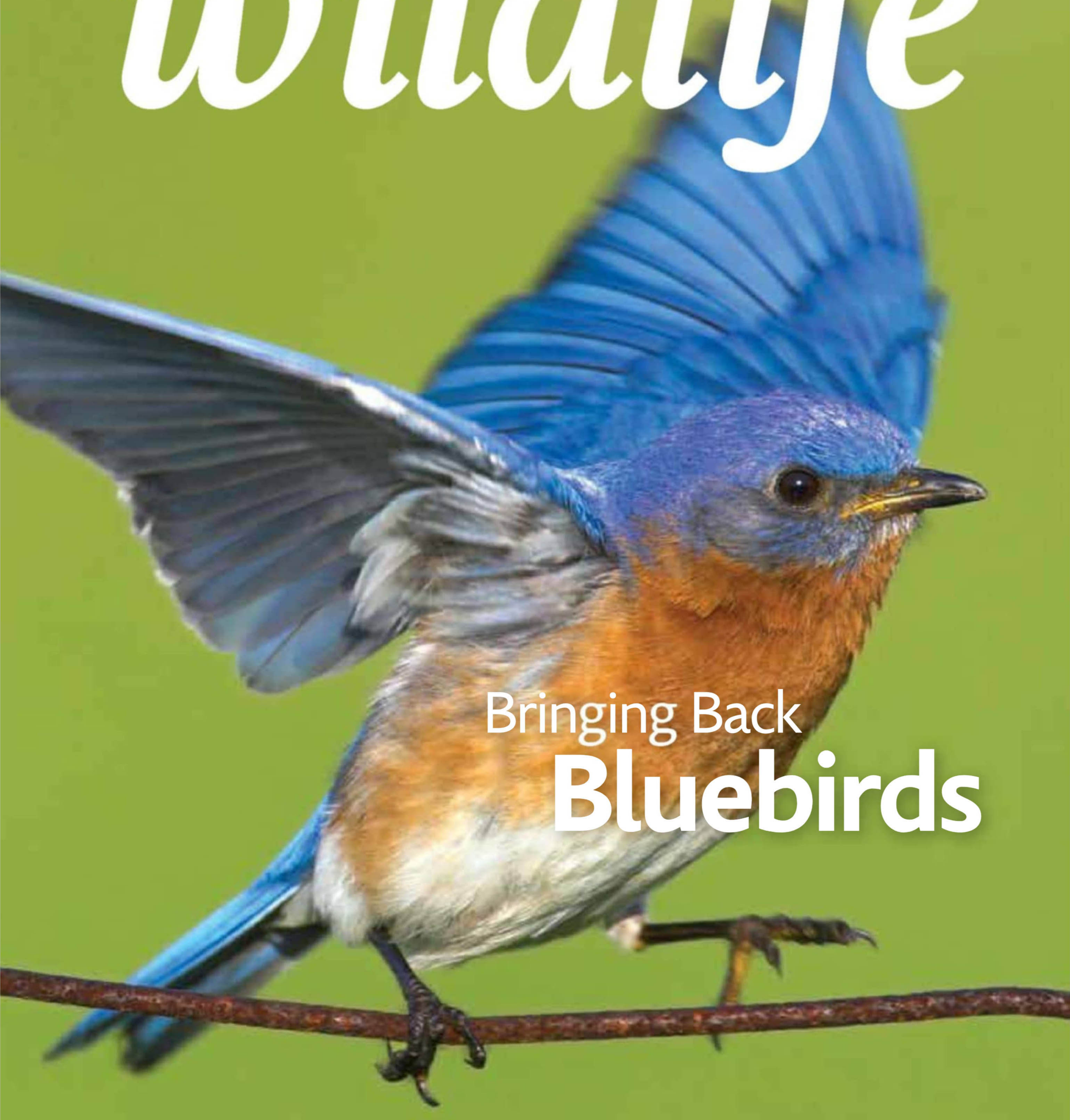
# canadian wildlife



## Bringing Back Bluebirds

CANADIAN WILDLIFE FEDERATION

SEPTEMBER + OCTOBER 2019
VOLUME 25, NUMBER 4

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canadian wildlife
September + October 2019
Volume 25, Number 4
WildlifeMagazine.ca

**ON THE COVER**
*Eastern bluebird*
*Photo by Robert McCaw*

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By Kat Eschner Photography by Robert McCaw

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Text and photo by Isabelle Groc

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Photo by John E. Marriott

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# A Simple Act With Impact

Readers of this magazine share a love of nature and a commitment to its wise use. We are motivated by stories about the role nature plays in maintaining our health by providing clean water, air and food, about nature's position in the foundation of our economy and about its place in our culture. We are inspired by the creative and interesting work being done to conserve nature, as well as by learning what we can do. How we each choose to take action is a matter of personal priorities and opportunity, but sometimes a simple act can have greater impact than others. This fall is one of those times.

We are fortunate to live in a country in which we can voice our individual preferences and in doing so control the direction and priorities of our government in elections at local, provincial and national levels. In a matter of weeks, Canada will have a federal election, and each of us will have the opportunity to shape the priorities of our country.

The Canadian Wildlife Federation, as you know, believes sustainable management of wildlife and nature should not be a politically partisan issue, but rather should be a core priority of any government and underpin all decisions affecting natural resources. For this and other good reasons, CWF is non-partisan.

As CEO, I take this seriously. Everyone here does. We advocate with each and every government for policy that benefits nature based on science, on-the-ground knowledge and unwavering commitment. It is one of the pillars of this entire organization.

We encourage our readers to participate in the upcoming federal election, to become informed on the issues affecting nature, to understand the positions of different parties, to hear how committed the candidates in your area are to your priorities, and to speak out on behalf of the issues that are most important to you. This is why you will see on page 14, Vote Widlife, a concerned voters guide to getting involved. It is a kind of toolkit to help you ensure your voice is heard, your priorities articulated. No matter which party is elected to govern, your voice will help prioritize careful management of wildlife and nature for all of society. This is a time when a simple act can have a great impact.

Rick J. Bates

Rick J. Bates
CEO, Canadian Wildlife Federation

## In Focus

**FROM THE DEPTHS**

*This wolf eel* (Anarrhichthys ocellatus) *was photographed near Port Hardy, Vancouver Island. Hideously ugly yet quite friendly creatures, they grow to two metres or more. Despite the name, they are not actually eels. Their preferred meals are sea urchins.*

*This image was originally submitted to a Canadian Wildlife Federation contest. Visit* ***cwf-fcf.ca*** *to enter monthly competitions.*

A healthy diet that's truly for the birds!

Give your flying friends something to tweet about. Feed them a healthy diet of CWF's exclusive birdseed blends. Designed by Canada's foremost wildlife nutritionist, these blends contain no low quality feeds like wheat, milo and corn. Instead, birds feast on a high quality mix of seeds rich in the unsaturated fats and fatty acids necessary to meet the nutritional needs of birds in Canada. Look for CWF birdseed at participating Lee Valley locations.

**Visit WildAboutBirds.ca for more details.**

Photo: Ted Busby

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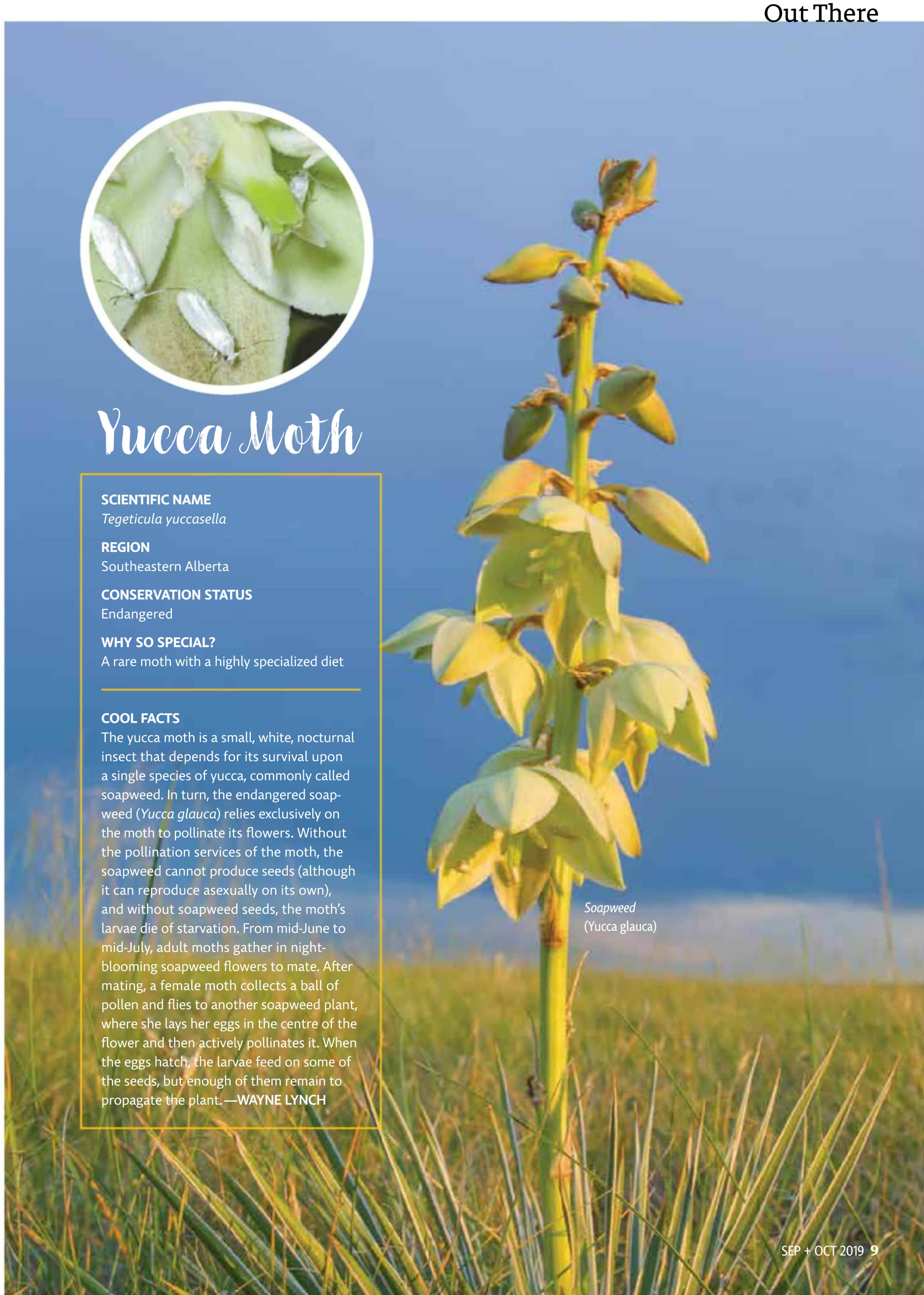


WAYNE LYNCH

*Soapweed*
(Yucca glauca)

# Yucca Moth

**SCIENTIFIC NAME**
*Tegeticula yuccasella*

**REGION**
Southeastern Alberta

**CONSERVATION STATUS**
Endangered

**WHY SO SPECIAL?**
A rare moth with a highly specialized diet

**COOL FACTS**
The yucca moth is a small, white, nocturnal insect that depends for its survival upon a single species of yucca, commonly called soapweed. In turn, the endangered soapweed (*Yucca glauca*) relies exclusively on the moth to pollinate its flowers. Without the pollination services of the moth, the soapweed cannot produce seeds (although it can reproduce asexually on its own), and without soapweed seeds, the moth's larvae die of starvation. From mid-June to mid-July, adult moths gather in night-blooming soapweed flowers to mate. After mating, a female moth collects a ball of pollen and flies to another soapweed plant, where she lays her eggs in the centre of the flower and then actively pollinates it. When the eggs hatch, the larvae feed on some of the seeds, but enough of them remain to propagate the plant. —**WAYNE LYNCH**

## Re: Conservation

### Canada bans shark fin trade

The Canadian Parliament made history in June when it passed an animal protection bill that outlaws shark fin products. Canada had banned "finning"—hacking fins off sharks then tossing the sharks back in the water—in Canadian waters in 1994 but still allowed imports: $3.2 million worth of shark fins were imported in 2018, mainly to make shark fin soup.

### B.C. needs to protect more land: First Nations

Three Kaska Dena First Nations are calling on the province to sign on to a proposal for a conservation area that would span 40,000 square kilometres in north-central British Columbia. The area would cover 10 major watersheds and seven herds of endangered northern woodland caribou on the First Nations' traditional territory.

JILL COOPER/ALAMY STOCK PHOTO

## In the Wild

**The State of Canada's Birds 2019, a report from the North American Bird Conservation Initiative and Environment and Climate Change Canada, tells the story of a mixed bag for Canada's birds. Learn about some of what the report has to say about birds across the country.**

*Evening grosbeak; pied-billed grebe*

### Waterfowl and wetlands birds

The numbers of many ducks, geese and other wetland bird species are increasing, but these birds are not out of the woods. Take the pied-billed grebe: it has become more abundant since 1970, but the loss of its wetland breeding grounds is still a threat.

### Grassland birds

Populations of the birds that depend on native grasslands have declined by a whopping 87 per cent since 1970. Major threats are pesticide use and habitat loss. Species like the Swainson's hawk, which migrates all the way to South America for the winter, highlight the importance of international partnerships in protecting grassland birds.

### Shorebirds

Shorebirds have collectively declined about 40 per cent since 1970, due to loss of habitat, pollution and overhunting. Long-distance migrants like the endangered red knot, which commutes up to 30,000 kilometres every year, have declined even more—by 52 per cent.

### Seabirds

Canada's seabirds are in major trouble: of the 58 species, 20 are at risk of extinction, 35 are of conservation concern, and only three are of low concern. But because they nest in remote locations and migrate great distances, their population trends are hard to track. That means the situation may be even more dire.

### Forest birds

One in three species of Canadian birds depends on forests, and not just in Canada. Because 83 per cent of forest birds migrate outside Canada for the winter, deforestation in places like South America threatens these birds too. Birds like the evening grosbeak need mature, healthy trees to get foods like seeds and fruits, so when forests are cut down, they lose more than just habitat.

ISTOCK. UPI/ALAMY STOCK PHOTO.

*Amundsen Gulf and Great Bear Lake, Northwest Territories and Nunavut*

## Research News

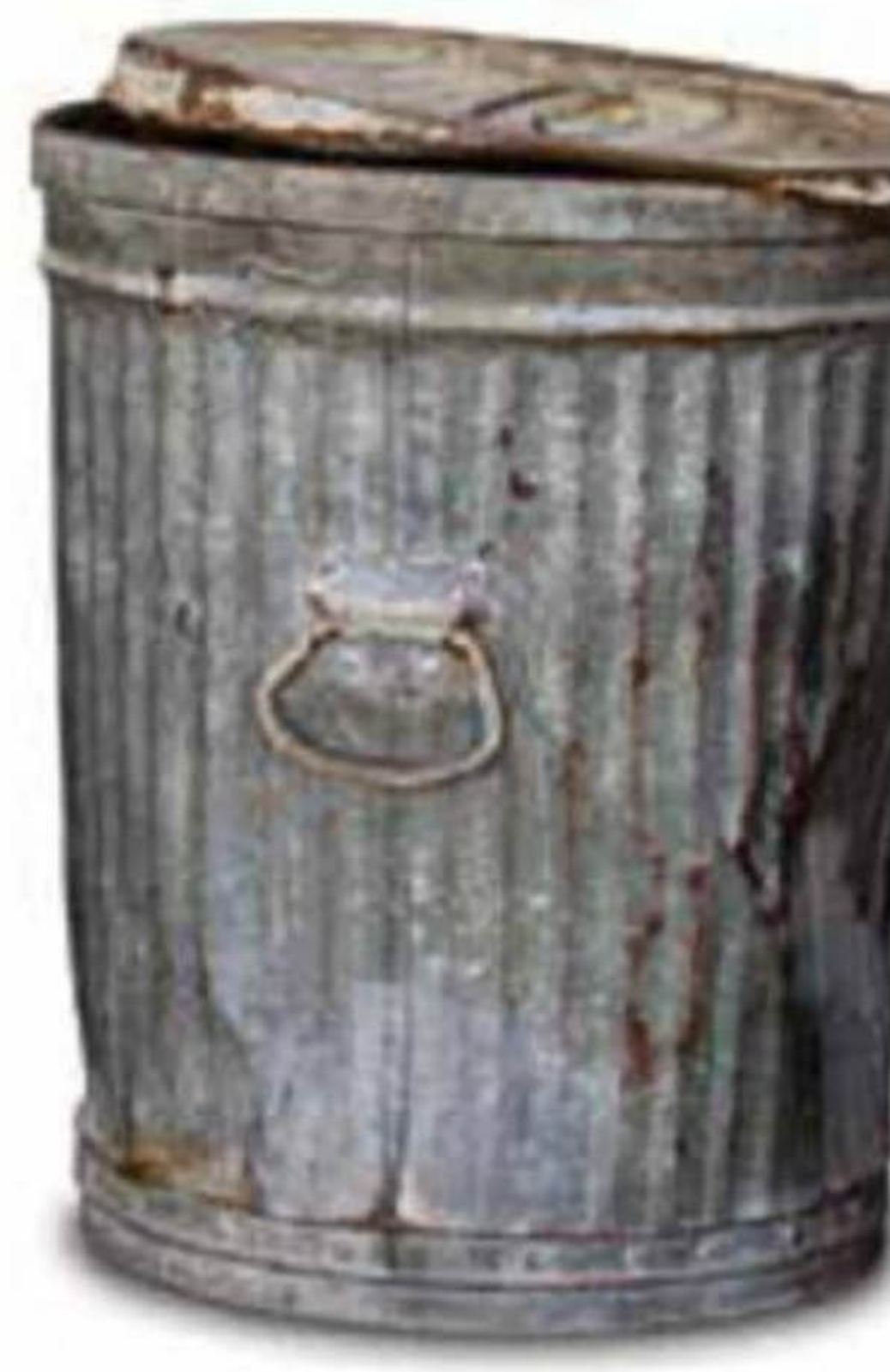
**CANADA'S PERMAFROST MELTING 70 YEARS EARLIER THAN EXPECTED**

A new study by researchers at the University of Alaska Fairbanks has found that permafrost in Nunavut and the Northwest Territories is melting much, much earlier than expected. Melting permafrost can lead to the ground collapsing and alter how water behaves in an area, as well as potentially releasing ancient diseases and definitely emitting lots of greenhouse gases.

**CANADA USED SKETCHY ENVIRONMENTAL RESEARCH TO APPROVE INDUSTRY PROJECTS**

An investigation by the *National Observer* revealed that environmental assessments for big industry projects have used bad scientific practices and been influenced by pressure from industry. But there's hope that the recently enacted Bill C-69, which creates the Impact Assessment Agency of Canada, will improve the assessment process.

### September 21
### World Cleanup Day



This World Cleanup Day, take a look in the mirror. Canadian homes throw out about 25 million tonnes of waste every year—that's about 710 kilograms per person. What are you doing to reduce your waste footprint?

# UPROOTED

## In our modern world, we have lost the connection between the foods we eat and the crops that provide them. It is called "plant blindness" and it is a dangerous thing

By Alanna Mitchell

**SEVERAL YEARS AGO, I STUMBLED ON THE EDEN** Project in Cornwall, England, while I was doing some research for a book. For about 160 years, the site was a mine producing white clay for Cornish porcelain, until the clay ran out. Today, nearly 20 years later, it has been made into a vast, vibrant garden, like its Biblical namesake.

It contains about 12 hectares of plants, some housed in geodesic domes that function as complex ecosystems, such as a tropical rainforest. More than two million plants grow there. It's a spectacular site, rising up out of a Cornish valley like a series of giant bubbles against the hills. But rather than the view, it's a story I heard there that has stuck with me.

Shortly after Eden opened, groups of schoolchildren began flocking there to marvel at the plants. Weird flowers thriving in what felt — to a British kid — like a living sauna. Shapes and textures of leaves and stems that felt like they were from another planet. The kids were entranced.

But then one of them came upon something he simply couldn't understand at all. It was an orange, growing on a tree. He protested. It was a fake, he asserted. Someone must have taped the orange to the branch. Oranges don't grow on trees; they come from the supermarket.

> **"Plant blindness" refers to the fact that many humans don't recognize that we depend on plants for survival**

This is a phenomenon called "plant blindness." Coined in 1998, the term refers to the fact that many humans don't recognize that we depend on plants for survival. It's a relatively new — and bizarrely fascinating — idea. Consider the fact that for most of the past 10,000 years, coaxing plants to do what we want has been an honoured and time-consuming obsession… and a prerequisite of human civilization.

We cajoled them into giving us bigger seeds that we could grow more easily. And we carefully crossbred different types to make sure the fruit would last through the winter or the leaves would be less tasty to pests or give us more energy.

A famous example is corn. Its ancestor was a type of wild grass — teosinte — with tiny cobs featuring miniscule kernels covered in hard shells. Thousands of years ago, Neolithic farmers in the Americas began saving the sweetest kernels for planting, nipping off extra stalks to make the heads grow bigger. Eventually, we ended up with the bruiser ears of corn we cherish today for tossing on the barbecue or boiling up in a pot of water, then slathering with butter.

In fact, human civilization has depended on knowing what crop to plant when, and when to harvest.

Today, there's a worrying disconnect, according to a paper by Tara Moreau of the University of British Columbia Botanical Garden and others, published a few months ago in *Plants, People, Planet*. Back in 1880, half the U.S. population was involved in agriculture. Today, it's just two per cent. Most of us live in cities. And many of the crops are grown to be processed into other un-plant-like substances: syrup, meal, flour, oil and starch.

Those plump kernels of corn, for example, are so ubiquitous and processed into so many other commodities that a quarter of the 45,000 or so items in the typical American supermarket contain the stuff, according to the food writer Michael Pollan. That includes diapers and toothpaste.

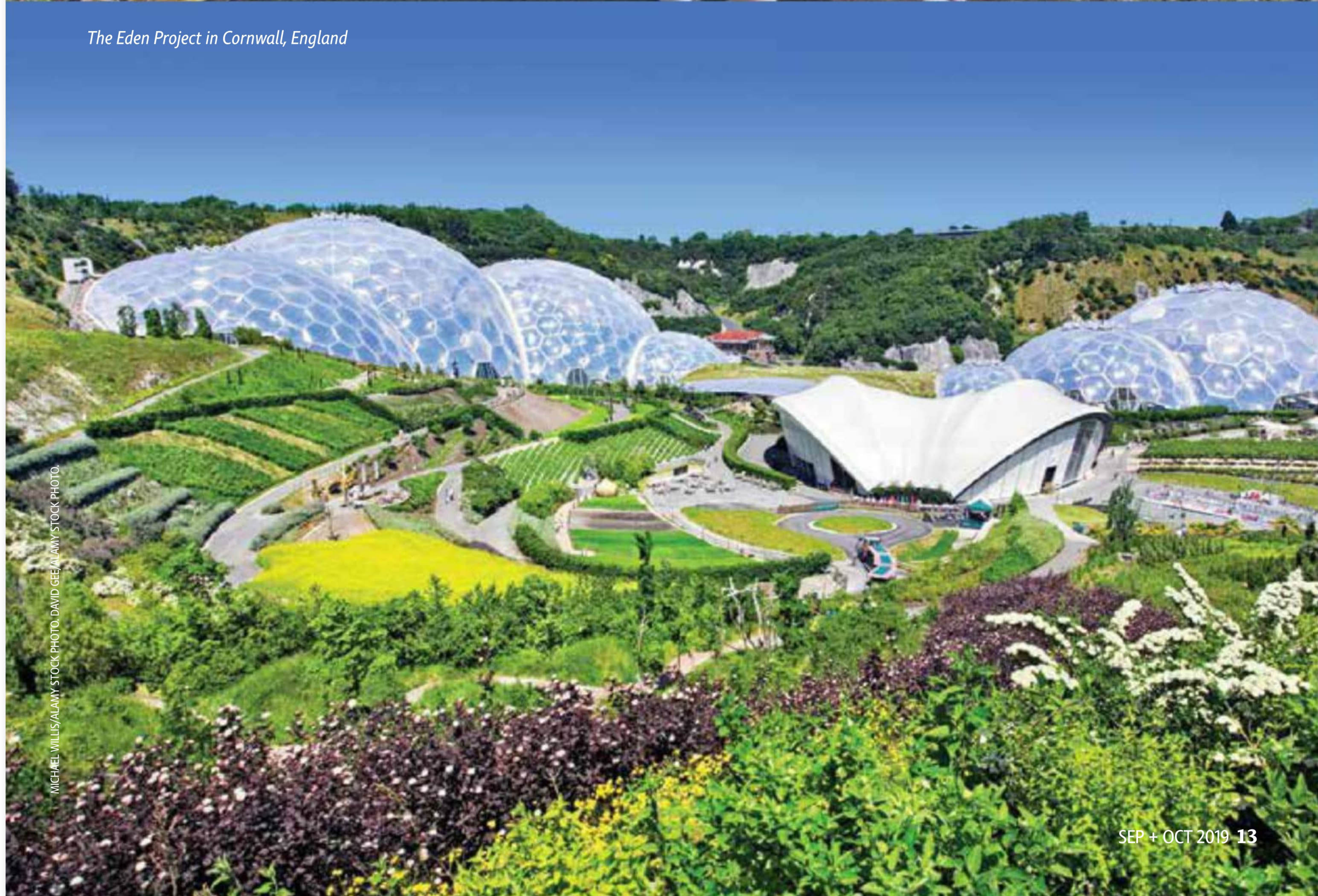
The problem is that we don't value what we don't see. And as the climate changes, growing plants for food is going to be more and more important, argue Moreau and her coauthors. And trickier. It's tied up with many other modern-day imperatives: the need to improve soil, conserve water, feed a growing population, preserve pollinators and reduce greenhouse gas emissions.

They suggest going back to the garden. To them, it means using botanical gardens, like the Eden Project or the UBC Botanical Garden, or any of the 3,500 others around the world, to educate people about what plants do. It's a bid to help humans relearn the concept that plants feed us, that we need them.

Maybe the human longing for plants is not completely lost. Moreau and her co-authors note that every major metropolis around the world features a public garden — or one nearby. They are on every continent except icy Antarctica. Already, they attract 250 million visitors a year, many of whom live in concrete jungles.

As for the Eden Project, I checked back again recently. This exhausted mine site has become a leading tourist attraction in the United Kingdom, with more than a million visitors a year. That's twice as many as Buckingham Palace.

Bananas
Plantains



The Eden Project in Cornwall, England

MICHAEL WILLIS/ALAMY STOCK PHOTO. DAVID GEE/ALAMY STOCK PHOTO.

# Vote Wildlife

**Fish don't get to ban chemicals in their streams. Birds can't vote to reduce urban light pollution. Lakes and rivers have no standing in environmental hearings. Bears don't have a say in how their forest is managed. Given the importance of nature to a huge majority of Canadians — and to the very reality of Canada itself — in the federal election on October 21, are you willing to be their voice?**

## Canada Cares

### Two recent surveys show Canadians are concerned about the environment

On Earth Day 2019 (April 22), polling firm Ipsos Canada released the results of a survey that showed the environment is the leading policy concern of one in five Canadians, second only to health care. Respondents said the most important environmental issues facing our country are:

**48%**
GLOBAL WARMING AND CLIMATE CHANGE

**23%**
AIR POLLUTION

**21%**
WATER POLLUTION

**21%**
DEPLETION OF NATURAL RESOURCES

**20%**
WILDLIFE CONSERVATION

In May, Ottawa research firm Abacus Data reported the results of a survey it conducted for the International Boreal Conservation Campaign:

- **86%** of Canadians support or strongly support protecting and conserving more natural spaces in Canada
- **87%** supported or strongly supported Canada's 2010 commitment to conserve 17% of the country's land and fresh water by 2020
- **94%** supported conserving more of the boreal forest as an effective means of carbon capture
- **78%** supported creation of Indigenous protected areas (such as the 14,000-square-kilometre Edéhzhie Protected Area, N.W.T.)
- **59%** believe Canada should be a world leader in conserving and protecting wildlife
- **58%** declared themselves disappointed (plus another 11% who are "angry") that the country has protected a smaller proportion of its land mass than other like countries

**Clearly, Canadian support for nature conservation cuts across political parties**

## Rivers are people too

### There is a movement afoot around the world to give legal rights to nature itself

The United Nations endorses the idea. In February, citizens of Toledo, Ohio, voted that Lake Erie has a legal right to "exist, flourish and naturally evolve," so now humans can sue polluters on the lake's behalf. In 2008, Ecuador amended its constitution to codify nature's standing before the courts. Since 2014, New Zealand has extended legal rights to a forest, a mountain and a river. Would you like to see wildlife's environmental rights enshrined in the Canadian Charter of Rights and Freedoms? And is it time for the country's highest law to include human Canadians' rights to a healthy environment?

## What matters to YOU?

### Here are some of key issues. Which are most important to you? What are your priorities?

- **Creating** and implementing a national plan to conserve the quality and quantity of our lakes and rivers, particularly as part of efforts to adapt to climate change
- **Meeting** international commitments and targets to conserve biological diversity
- **Establishing** creative new mechanisms to help finance conservation
- **Conserving** key habitats like the prairies and boreal forest
- **Using** economic policy tools to create incentives for actions helpful to nature — and disincentives for actions that destroy nature
- **Passing** an environmental bill of rights for Canada
- **Having** Canada take a leadership role in encouraging and supporting the conservation of nature
- **Restricting** the use of systemic pesticides such as neonicotinoids
- **Increasing** investment to conserve Canada's 700 species at risk
- **Stopping** plastic pollution
- **Meeting** Canada's greenhouse gas emission targets for 2030 and 2050
- **Conserving** whales like the North Atlantic right whale and B.C.'s resident orcas

## At Your Front Door

### When your candidates come knocking

This is a two-way conversation: you can learn about party platforms and ask candidates questions about what is important to them. And they are listening to what you are concerned about: political candidates and their parties respond to the public will, at least once they are aware of it. At election time is when they listen most carefully. This is your chance to make your priorities known: politicians will not know how important conserving our natural world is to you unless you tell them.

- **Let** your local candidates from every party know what is important to you.
- **Whether** at your front door or at a candidates meeting, get them to explain their party's platform.
- **Go** deeper and learn about how important these issues are to them as individuals. Your local candidates may not agree with their party and could be an effective advocate for your point of view within their party.
- **Make** sure they know that their party's positions on conservation and other nature issues will help determine how you will vote.
- **Tell** them what is important to you.

## Learn More

### When it comes to elections, knowledge is power

Each of the major political parties has a robust web presence. Visit their websites to learn about their platforms on the issues that matter most to you. If you have questions, contact them. (They will be delighted to hear from you.) For more, visit these non-partisan voter education and engagement sites online. They offer useful information and links to other organizations.

**ELECTIONS CANADA**
elections.ca
The independent, non-partisan agency that conducts Canada's federal elections offers a wide array of essential information, including information specific to your riding, such as the full roster of candidates.

**APATHY IS BORING**
apathyisboring.com
This non-partisan, charitable organization supports and inspires youth to be active participants in our democracy.

**SAMARA CENTRE FOR DEMOCRACY**
samaracanada.com
This charitable organization focuses on the participation of citizens in public life.

## Vote!

### Give voice to what matters to you

Now that you've done the work, exercise your right. On election day or in advance polls, vote. Vote with your conscience.

Male eastern bluebird

# The Happiness of Bluebirds

Thanks to three decades of action by dedicated volunteers, eastern bluebirds are thriving again. There's a lesson for all of us here

By Kat Eschner Photography by Robert McCaw

**FOR MEMBERS OF THE ONTARIO EASTERN BLUEBIRD SOCIETY,** early spring brings more than respite from the dark days and freezing weather winter. It also brings the promise of bluebirds. If you live in rural areas of Ontario, you may have spotted an eastern bluebird or two flitting between bushes in their preferred semi-open habitat, perching on a berry bush or hovering above the ground to catch an insect. These plump thrushes (*Sialia sialis*) are about the size of a common house sparrow, at between 16 and 20 centimetres long, with a distinctive high-pitched trill and, of course, the blue plumage that gives them their name and contrasts nicely with their orange breasts. In most of Ontario, eastern bluebirds can be spotted during their breeding season, when they migrate northwards and pair off to mate and raise young, between late March and early September.

**MR BLUEBIRD ON MY SHOULDER**

*Bill Read checks on a next box; examines a bluebirds wing for aging; young bluebirds inside the nestbox; female brings an ant to nest to feed young*

Eastern bluebirds are especially vulnerable — and especially cute — when they pair off and mate. In the wild, couples build nests in the hollows of trees, in fenceposts, and in any other little hole where they can raise a family. But those places are few and far between now: "Natural cavities suitable for bluebirds are scarce in agricultural landscapes," says Mike Cadman, a songbird biologist at the Ministry of the Environment and Climate Change Canada.

That's where this society of bird-lovers, led by founder Bill Read, comes in. After a spate of chill winters in the 1970s coupled with decreasing habitat and threats from pesticide use on the agricultural lands they used instead, their natural nesting sites were becoming harder to find and fledge from. That made nest boxes of the kind Read and the Ontario Eastern Bluebird Society foster essential to the species' recovery. "Bluebird boxes and trails have contributed considerably to the increase of the species by increasing the number and availability of nest sites in suitable habitat," Cadman says.

After they've gotten acquainted, a courting pair of eastern bluebirds builds a small cup-shaped nest, with the female doing most of the construction work. There, if all goes well — that is, if they aren't threatened by invaders like house sparrows or rats, and their nest isn't destroyed by the weather, and the birds are able to find and consume enough insects to keep reproducing productively — they can fledge up to three broods of between four and seven baby birds apiece. Both female and male birds hang around to bring food to their young, which take 18 or 19 days before they leave the nest and set out on their own. Sometimes, young from the last brood hang around to help feed the new nestlings.

Many Ontario Eastern Bluebird Society members have numerous nest boxes, which means that in a single year, one person may fledge hundreds of new birds. In 2018, as the society celebrated its 30th anniversary, its members collectively fledged more than 4,200 bluebirds and thousands of tree swallows, wood doves and kestrels.

Their "nest box trails," as groups of nest boxes are referred to, and public education initiatives are credited with helping the eastern bluebird to grow and stabilize its population after years of decline, putting the species on track. After being designated a species of special concern in 1984, they became common enough to be deemed "not at risk" by the federal Committee on the Status of Endangered Wildlife in Canada in April 1996. The population growth of these birds is "in large part as a result of a successful nest box program," Environment Canada acknowledges. It's a story we can all learn from.

Read founded the Ontario Eastern Bluebird Society in 1988 as a way to rally like-minded people around the charismatic little birds and encourage responsible nest box building. He had been keeping nest boxes as a hobby since he worked at a wildlife centre in the mid-1970s. Back then, "I started to observe bluebirds more," he says. Seeing that many of the birds weren't surviving in the nest boxes nailed to trees, he wanted to do better. Today, he has almost 400 boxes.

Read isn't alone in catching the nest box bug: some members of the Ontario Eastern Bluebird Society are responsible for literally hundreds of boxes, which they check anywhere from daily to monthly. But it's more than a hobby: it's citizen science. Today, the society has an executive leadership of 10 people and a membership of around 170 people. Many of the members are retirees who care for birds to keep busy, Read says, but other members are just enthusiastic about the task at any age.

"I grew up in a farming community," says board member Mary Ann Rose, "and we had a neighbour.... I used to see him going by with nest boxes and monitoring nest boxes." When she had children and a farm of her own, Rose carried on the tradition. She joined the society in 2006, after many years of fledging birds. "There are some good mentors there, and it's kind of a common interest among the group," she says.

For Read, the bluebirds and the society he founded became a life's work: although he was a high school teacher for many years, around the time he founded the society, he went to work for Canadian Wildlife

## INTO THE BLUE: **COOL FACTS**

*Mountain bluebird*

### Am I Blue?

Considering people's affection for the striking colour of bluebirds, it's ironic to discover that the blue we see is an illusion. There is no such thing as a true blue bird. The blue colour is created by the way light waves interact with tiny pockets of air and protein molecules in the bird's feathers. In other words, the blue is a structural colour, rather than one produced by pigments such as orange, yellow and red. If you grind up a bluebird feather, it turns a dull brown. **—K.B.**

### Not All Bluebirds Are Alike

Bluebirds of one region are sometimes confused with other bluebirds, but they can be distinguished without difficulty. The western bluebird has a blue (male) or gray (female) throat and orange breast, the eastern bluebird has an orange throat, and the mountain bluebird lacks orange colour anywhere on its body. **—K.E.**

### Slippery Slope to Summer?

Skiers and snowboarders refer to a "bluebird" day, a clear and sunny day after a snowfall, perfect for hitting the slopes, though with a hint of melancholy as it may be seen as a harbinger of nearing spring. **—K.E.**

### Spirit in the Sky

The Cochiti people in the American southwest believe the firstborn son of the Sun was named Bluebird; nearby Navajo saw the mountain bluebird as a spirit of the rising sun in animal form.

Further north, Iroquois myths tell of the bluebird driving off the gods of winter, while Cherokee legends hold that bluebirds control the weather, particularly the wind. The Ojibwe tell a tale of how bluebirds helped make the first rainbow, when the Earth was new and there was no colour.

**MATING RITUALS**
*Eastern Bluebirds engaging in courtship wing waving; eggs in a nest box; male feeding young*

**Passionate volunteers are responsible for hundreds of nest boxes, which they check regularly. It is more than just a hobby: it is citizen science**

Service, "doing studies on blue birds and tree swallows and pesticides related to orchards," he says.

This research bent is reflected in the activities of the Ontario Eastern Bluebird Society today, from banding birds for study to the rigorous annual counts and recording practices the society asks of its members who maintain nest box trails. All told, these resources represent 30 years of data on understudied species — the eastern bluebird and other cavity-nesting birds like tree swallows.

The monitoring activities performed by the society provide important information on the health of the environment where the birds live, Rose says. "They're bioindicators, because they tell us about the health of our environment in other ways," Rose says. "As species decline, you have to think 'why?'"

Many members erect and maintain nest box trails, sometimes in collaboration — Rose shares a trail with another society member, for example. Building and maintaining such a trail, which provides vital habitat for the bluebirds and for other cavity-nesting birds, is no small task.

While among the society's members there are power nest box builders who devote unending hours to the task of building them, the trick if you're interested is to start small, Read says. "The easiest part of any nest box project is building them. We account that as about five per cent of the work."

Although you might have built and erected a birdhouse on a tree as a child, that's a far cry from what Ontario Eastern Bluebird Society members and others who create nest box trails do. Early each spring, "you're doing your cleanouts and greasing poles and managing your boxes in every way, making sure they're ready for the birds when they come back," says Rose.

The most important things are putting the boxes in the right kinds of places, having protection from predators and regularly monitoring the boxes to see what's happening in them. The society endorses only free-standing boxes on a greased pole or with a guard to prevent predation of the nests by everything from field mice and squirrels to house sparrows and wrens. (Boxes sitting on fences or nailed to trees are "just highways for predators," Read explains.)

It's not a task for the faint of heart. The nestlings are vulnerable, and all kinds of things can happen: a recent newsletter relates the story of a volunteer who managed to save some chicks after a long period of cold, wet weather meant their parents were able to find only earthworms to feed them, rather than the mix of beetles and flying insects that's usual. The resulting diarrhea coated the nest and the nestlings, endangering the nestlings. But an intrepid volunteer who found them managed to clean them (in the back of her car, with a bottle of water warmed on the car heater) and rehome them in a nest that wasn't experiencing this problem. They all survived.

"It really is amazing, the nurturing and things that go on," says Rose. "It's nice to have a small hand in that process." In return for their labours, members get the satisfaction of watching a new generation of birds come into the world. "A lot of our members will feed them meal worms," Read says, sometimes spending thousands of dollars a season to do so.

Cavity-nesting birds like the eastern bluebird are under threat like never before, as their traditional habitats are built over or farmed on and the weather becomes more volatile as a result of climate change. But they're important to local biodiversity, and keeping them alive is a way to support the whole ecosystem. "The OEBS does tremendous work on behalf of bluebirds, by encouraging people to build good boxes and use them wisely, by informing people about the species and by collecting useful data on these beautiful birds," Cadman says.

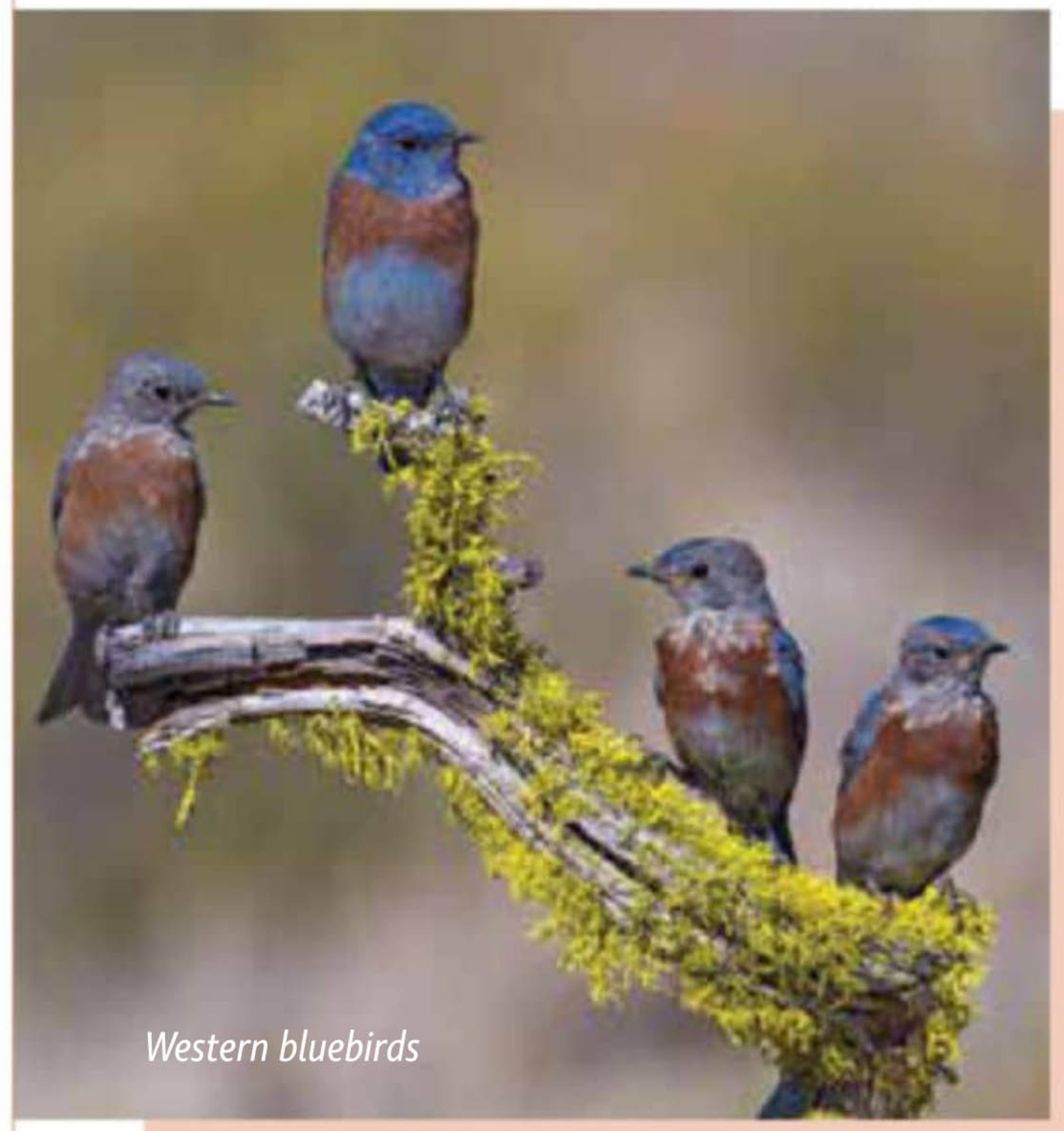
If species like the eastern bluebird are to survive and thrive into the uncertain future, more people will have to take on an active role in helping them. Perhaps there's a bird in your area that needs such assistance.

WESTERN BLUEBIRDS: TIM ZUROWSKI

# A WORK IN PROGRESS

## In, B.C. a bluebirds translocation and repopulation program in the Cowichan Valley struggles, despite a promising start

By Kerry Banks



*Western bluebirds*

EACH SPRING, MEMBERS OF THE COWICHAN VALLEY Naturalists' Society eagerly await the return of the "flying blue jewels." It's a name they have applied to the tiny population of formerly extirpated western bluebirds (*Sialia mexicana*) that now live in the valley. The society is hoping it will eventually grow into a self-sustaining breeding population on southeastern Vancouver Island and the southern Gulf Islands. These beautiful migratory songbirds are famed for their ability to evoke happiness and wonder, and that holds true in the Cowichan. "Anyone who sees them gets very excited. They inspire a real sense of joy and an appreciation of nature," says Hannah Hall, a biologist with the society.

Western bluebirds are small thrushes that spend much of their lives close to the ground. Often seen perching on tree limbs and fence posts, they like to hover low over open fields where they hunt for their food. Upon seeing an insect, they will quickly drop to the ground to snatch their prey. Males have brilliant blue plumage and rust-coloured breasts, a colour combo that caused renowned naturalist W.L. Dawson to exclaim in 1903, "Reflecting heaven from his back and the ground from his breast, he floats between sky and earth like the winged voice of hope."

*Cowichan Garry Oak Preserve near Duncan, B.C.*

NATURE CONSERVANCY CANADA

Western bluebirds breed throughout much of the western United States and Mexico and were also once widespread across southwestern British Columbia. But the Vancouver Island population totally disappeared in the mid-1990s, the victims of a lethal trifecta: ongoing loss of habitat, competition for nesting sites from growing sparrow and starling populations, and predation by raccoons and cats.

In 2012, a five-year project called Bring Back the Bluebirds was launched to re-establish western bluebirds at the Cowichan Garry Oak Preserve near Duncan, B.C. The Garry Oak Ecosystems Recovery Team, working with the Nature Conservancy of Canada, organized the construction of nest boxes, the engagement of landowners and the "sourcing" of birds. The birds were drawn from a healthy population of some 600 western bluebirds that inhabit the sprawling Fort Lewis-McChord military reserve near Olympia, Washington.

The goal of the Cowichan project, which was based on a similar five-year reintroduction of bluebirds to Washington State's San Juan Islands in 2007, was to translocate 90 bluebirds to the Cowichan Valley. Ultimately, only 65 were imported over four years because of bureaucratic snarls and health concerns. After reaching a high of 28 returning adults and 67 fledglings in 2016, the project was handed over to the Cowichan Valley Naturalists' Society. It currently has about 25 volunteers actively engaged in the venture, plus two paid employees, project coordinator Hall and wildlife technician Braden Judson.

All told, the society maintains 250 nest boxes on 18 different trails, all thanks to the support of 70 landowners. These nest boxes also provide homes for swallows, wrens and chickadees. Local volunteers donated 3,000 hours to the project in 2018, including the work of 15 trail monitors and five others who feed the birds mealworms each spring. In a good year, the bluebirds can rear two broods of four to eight babies that stay in the nest for about 20 days before fledging.

In addition to restoring bluebirds to their former haunts, the project aims to help preserve the Garry oak ecosystem in which the birds live. This unique habitat of gnarled oaks and open meadows supports a wide range of wildflowers, grasses, shrubs, lichens and fungi, as well as a variety of animals. It is one of Canada's most endangered ecosystems — only three per cent of native Garry oak ecosystems remain in a natural state in B.C.

Although the Bring Back the Bluebirds project has enjoyed strong local support and the volunteers have perfected their techniques, the birds are struggling. In 2018, the population totalled 12 birds that produced nine successful nests and 42 fledglings. This year, only nine of the banded birds returned from their migrations to Oregon and California. The small population is a concern, as the survival of the birds remains vulnerable to inclement weather and skewed male-to-female reproductive rates.

"The pattern in the Cowichan seems to be following what happened in the San Juan Islands. Soon after we stopped doing translocations there, the population crashed from 36 birds to three," says Gary Slater, an avian ecologist with the Center for Natural Lands Management in Olympia, Washington, who has been involved in both projects.

Although reproductive rates at the Cowichan and San Juan sites match those at the military base, the adult birds are not returning at the same rate from their migratory travels. Slater believes that more translocations will have to be done to sustain the populations. "Ideally, we would like to move as many birds as we can into the Cowichan Valley and also introduce bluebirds to other sites in the area, such as Whidbey Island and the Saanich Peninsula." In fact, biologist Hannah Hall says the Cowichan Valley Naturalists' Society is now raising funds to import more bluebirds from Washington in the spring of 2020.

As Slater notes, "The translocation of songbirds is a new scientific field, and we're still trying to determine which methods succeed and which ones fail. There's more work that needs to be done."

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*Prize may not be exactly as shown.*

GETTY IMAGES

CANADIAN WILDLIFE FEDERATION

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# PROVIDING SAFE PASSAGE

By Sophie Vigneau

In the fall, salmon embark on a rigorous journey back to the rivers in which they were born. They fight powerful currents and rapids, leap over waterfalls, and try to avoid savvy predators such as osprey, bears, eagles and humans. In addition to these natural obstacles, man-made barriers along our waterways restrict access to historical ideal salmon spawning and rearing habitat, making the salmon's journey even more difficult and less likely to succeed.

## Blocking the Way

Man-made barriers prevent salmon from completing their passage, often because barriers are too high for salmon to jump over, or because culverts don't allow enough water flow for salmon to access waterways. These barriers are having negative effects on salmon life cycles. For every thousand eggs laid and fertilized by a pair of adult salmon, very few adult salmon survive the life cycle. With a growing number of fish passage barriers blocking our nation's waterways, the survival rate of salmon will likely continue to decline.

Fish barriers are truly becoming a global problem for migrating fish, but are especially threatening to anadromous species — fish that migrate from the sea to freshwater to spawn. These species, including many salmon species, rely on networks of connected waterways to complete their long-distance journey. Five species of Pacific salmon (Chinook, Chum, Coho, Pink and Sockeye), as well as Steelhead, are struggling to survive due to the artificial and natural obstacles they face during their crucial migration through disconnected river networks. These barriers make it difficult for salmon to access their spawning and rearing habitat, limiting their reproduction and causing a decline in the sustainability of fisheries in British Columbia.

Photos (l-r): Fernando Lessa; Canadian Wildlife Federation/Gerry Leering; Canadian Wildlife Federation/Gerry Leering

« Passage of large adults returning to their spawning grounds must be accessible. Several species remain resident in the stream for up to two years. During this rearing period, these small juveniles need to be able to access refuge habitat from low and/or high flow events and predators. This could be done by ensuring passage over low flow barriers during periods when stream temperatures may reach lethal ranges.

## Providing Safe Passage

The Canadian Wildlife Federation is working towards a brighter future for Pacific salmon species by improving waterway passage to and from their spawning and rearing habitat.

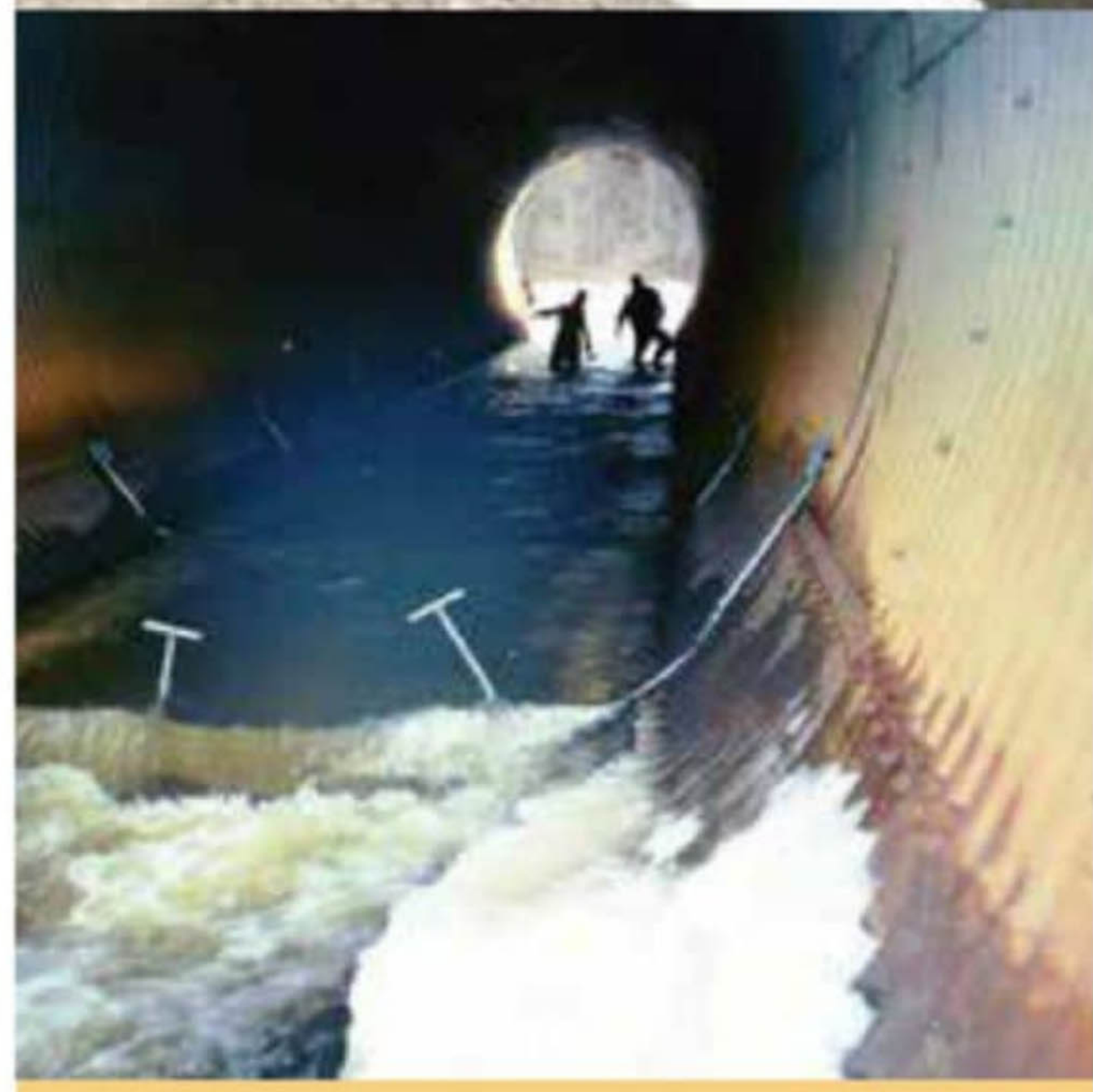
CWF's goal is to reconnect streams and rivers by remediating obstacles such as rail and road culvert crossings, weirs, levees and dams. CWF is working to improve our nation's fish passage waterways using two major strategies:

1. Work with municipal, provincial, federal and Indigenous governments, coupled with stewardship and industry groups, to secure the funding, support and technical expertise needed to implement and enhance fish passage improvement projects, starting in British Columbia and extending to our entire nation.
2. Identify and prioritize barriers for remediation in a national database that organizations can use to assess and move forward with fish barrier remediation in their given areas.

> "Fish barriers like dams and dykes have been identified as a critical reason why many fish stocks are in decline," says Nick Lapointe, CWF's Senior Conservation Biologist for Freshwater Ecology. "It's more important than ever that we take a good hard look at these barriers and start fixing them to allow fish to migrate freely."

In British Columbia, CWF is working in partnership with the Pacific Salmon Foundation and the B.C. Fish Passage Technical Working Group and others to implement these strategies. British Columbia has demonstrated leadership in fish passage remediation and removal. CWF's goal is to expand the beneficial fish passage work already happening in B.C. and to apply the successful strategies from these additional projects to the rest of Canada. CWF is also conducting fish passage work outside of B.C. through research, advocacy and by exploring other pilot project opportunities.

There are many ways to remove or remediate fish barriers. Creating a nationwide database of existing barriers allows for prioritization and optimization of remediation and/or removal that yields the greatest ecological value to fish populations within a given budget. Securing funding and providing technical expertise in fish barrier removal or remediation will allow local projects and groups to improve fish passage within their geographical areas. CWF will strategically plan fish passage improvements to help ensure that current and projected habitat quality remains the same or improves as a result of remediation and removal, taking into consideration changing environmental conditions.



The Canadian Wildlife Federation is eager to implement positive change in Canada's waterways through the removal and remediation of fish barriers to help migratory fish species. Our nation's waterways are in need of improvement and, thanks to the support of RBC Foundation funding, as well as financial support from the Canadian Nature Fund for Aquatic Species at Risk and the British Columbia Salmon Restoration and Innovation Fund, we have been given the opportunity to make a real difference for these species.

CANADIAN WILDLIFE FEDERATION

# MOTHS IN A NEW LIGHT

After being in the dark too long, scientists now say moths are key pollinators. And there are countless species throughout Canada. Nature photographer **Tim Zurowski** was so enthralled by what he found right outside his door, he set up a backyard portrait studio for local moths. He's at 350 species... and still counting

*Hemithea aestivaria* common emerald

# MOTHS

are the forgotten ones, the poor neglected cousins of their showy butterfly relatives (they are all Lepidoptera after all). That's a shame, because moths can be as beautiful, complex and fragile, just seldom as flashy. Of course, most moth species are nocturnal.

As recent studies of pollinators have shown, moths are hugely important, doing the night shift carrying pollen more efficiently and further than butterflies do. But not all are so admirable: many moth species are federally listed pests that lay waste to crops and destroy woods, the dreaded gypsy moth among them.

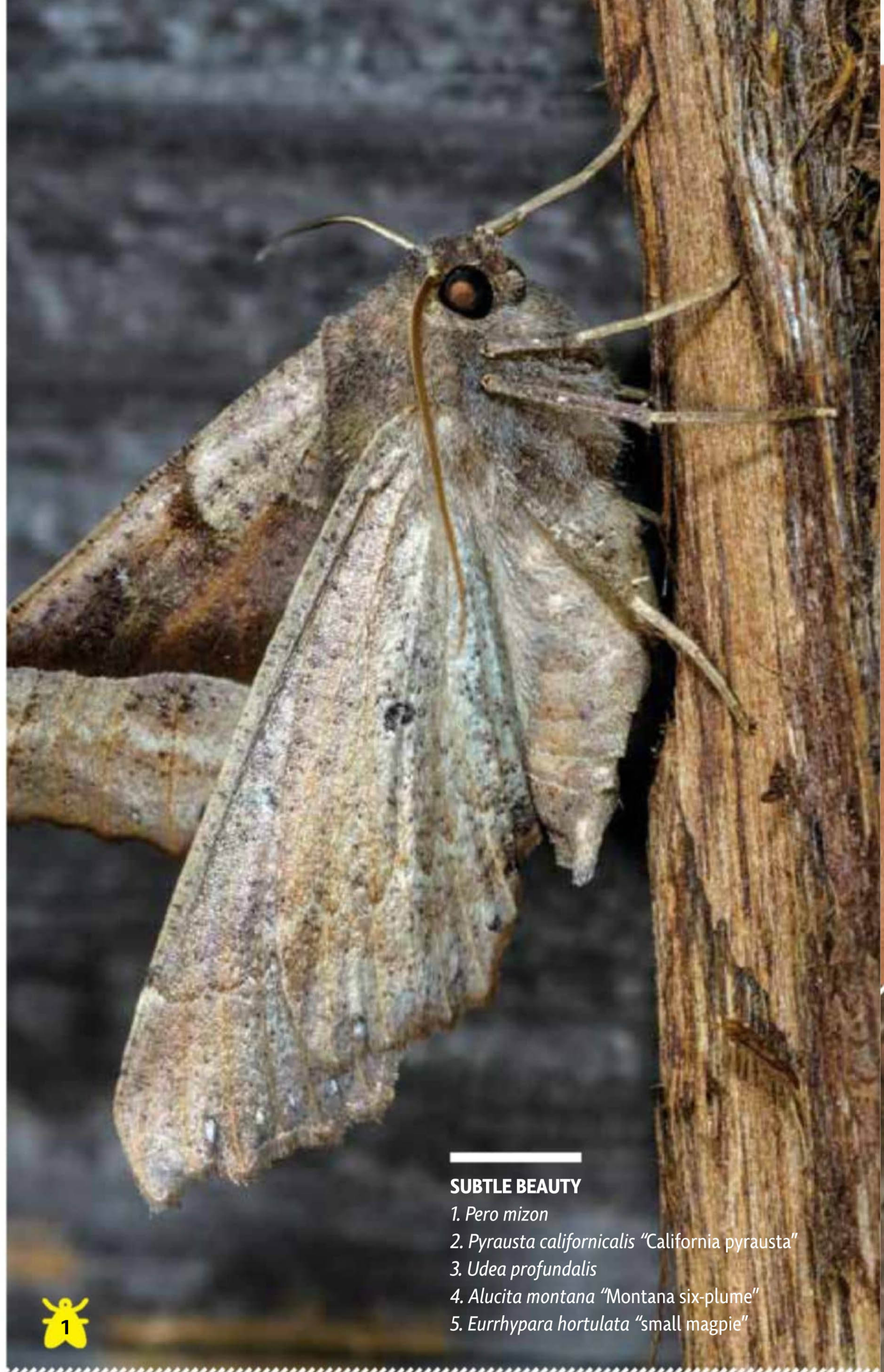
Every part of Canada is home to some of the several thousand different species, perhaps four per cent of the Earth's total number of different types of moths. They range in size from the width of a fingernail to the breadth of a large hand. They thrive in temperate climes largely, though the Arctic woolly bear moth makes its home in the High Arctic. In the south, many struggle, like the endangered false-foxglove sun moth (*Pyrrhia aurantiago*), for the usual reasons: invasive species, habitat encroachment and degradation, and pesticides. Learn more about these fascinating and essential creatures at cwf-fcf.org.

**THE PHOTOGRAPHER AND THE PHOTOS**

Tim Zurowski started nature photography around 1982 but got into moths only in 2018. He started photographing them in his large wildlife-friendly yard in Saanich, outside Victoria, B.C. "Once I saw the variety and was able to get identifications for them, I became fascinated. I had no idea how diverse and numerous they are."

Moths are nocturnal, so photographing them presents a real challenge. "I am not an expert in this area, but I am learning as I work," he says. Since certain species of moths are attracted to specific light wavelength spectrums, he uses a fluorescent blacklight, an LED blacklight, a warm incandescent light bulb and a cool bulb as well. Inexorably drawn by the bright lights, once they are in the area, the moths are attracted to the blacklights. "I have a set-up on a six-foot cedar fence with natural pieces of bark and large leaves attached providing a few different natural settings."

So far, Zurowski has photographed more than 350 species right in his backyard. There are over 2,000 species in B.C. alone. "It is very exciting. You never know what is going to show up." See more at timzurowski.smugmug.com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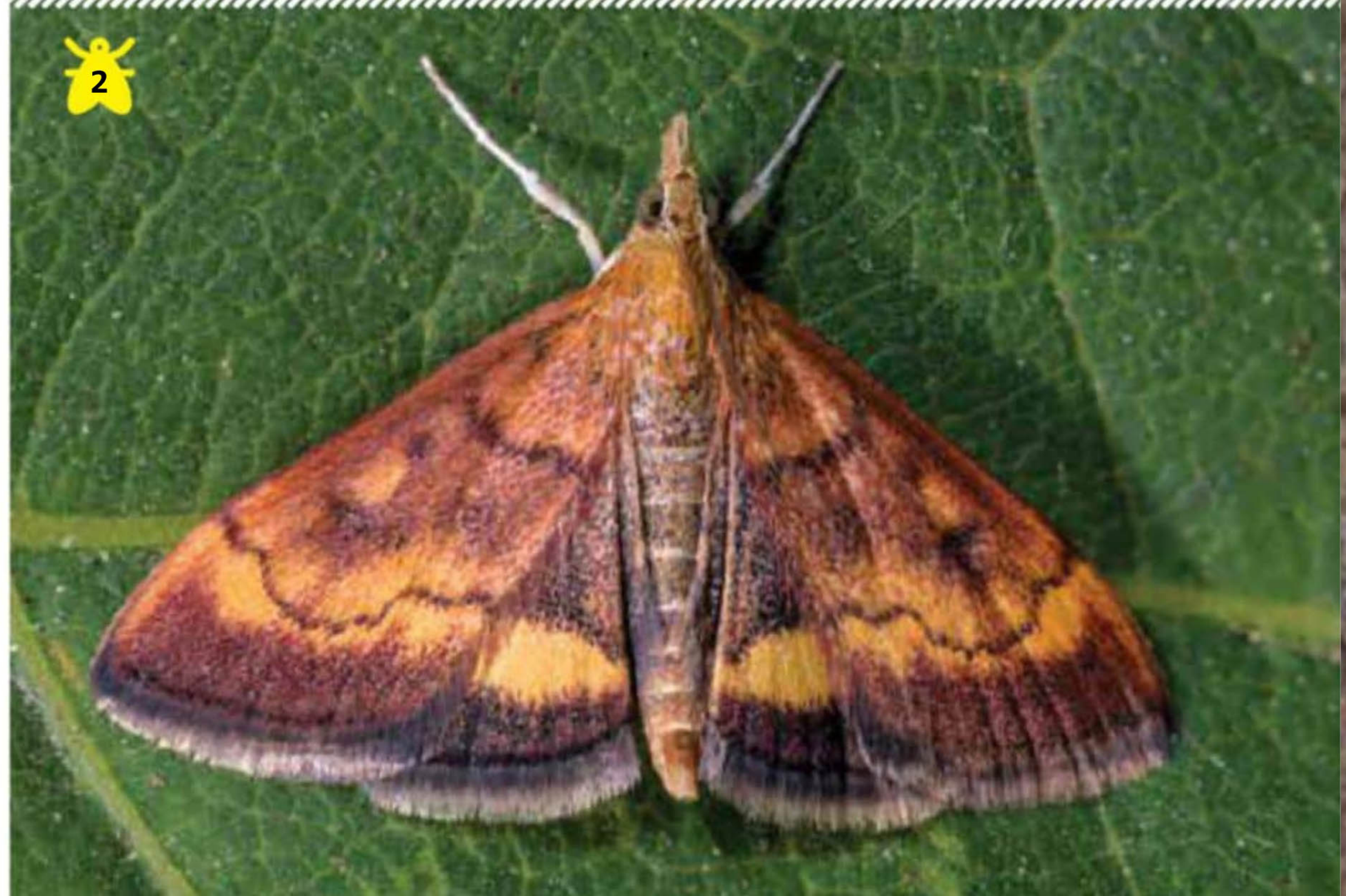
**SUBTLE BEAUTY**

1. *Pero mizon*
2. *Pyrausta californicalis* "California pyrausta"
3. *Udea profundalis*
4. *Alucita montana* "Montana six-plume"
5. *Eurrhypara hortulata* "small magpie"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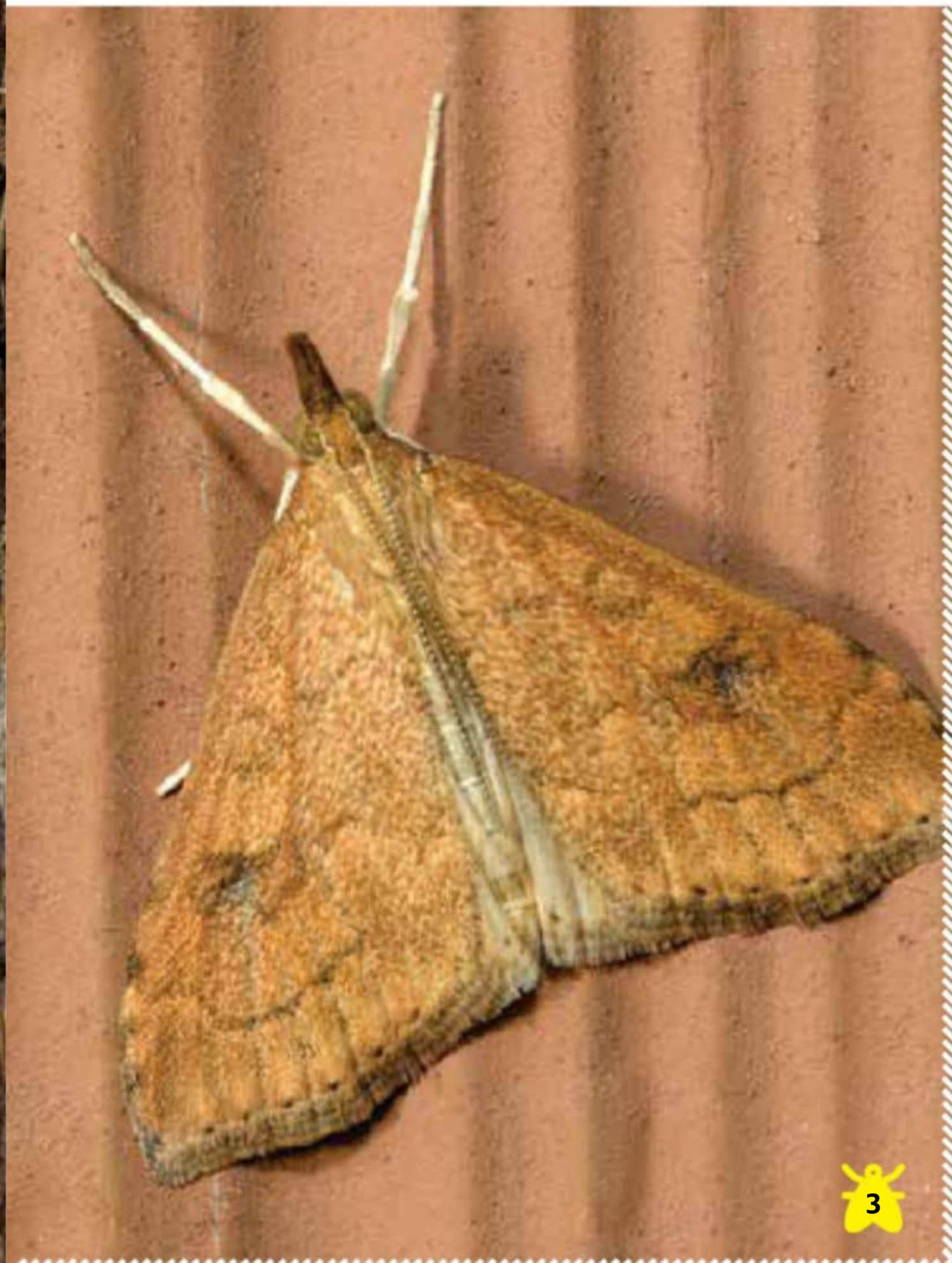
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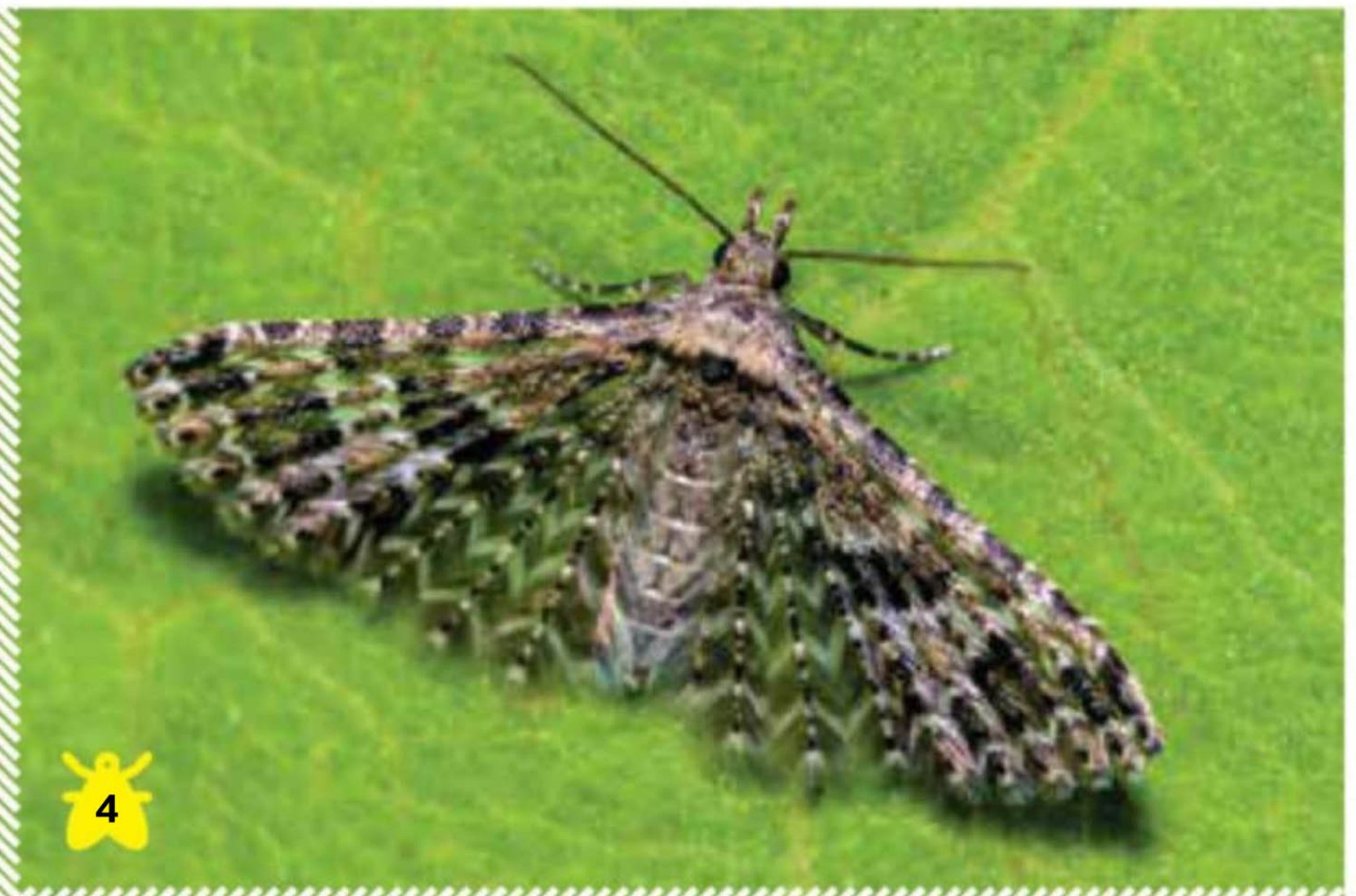
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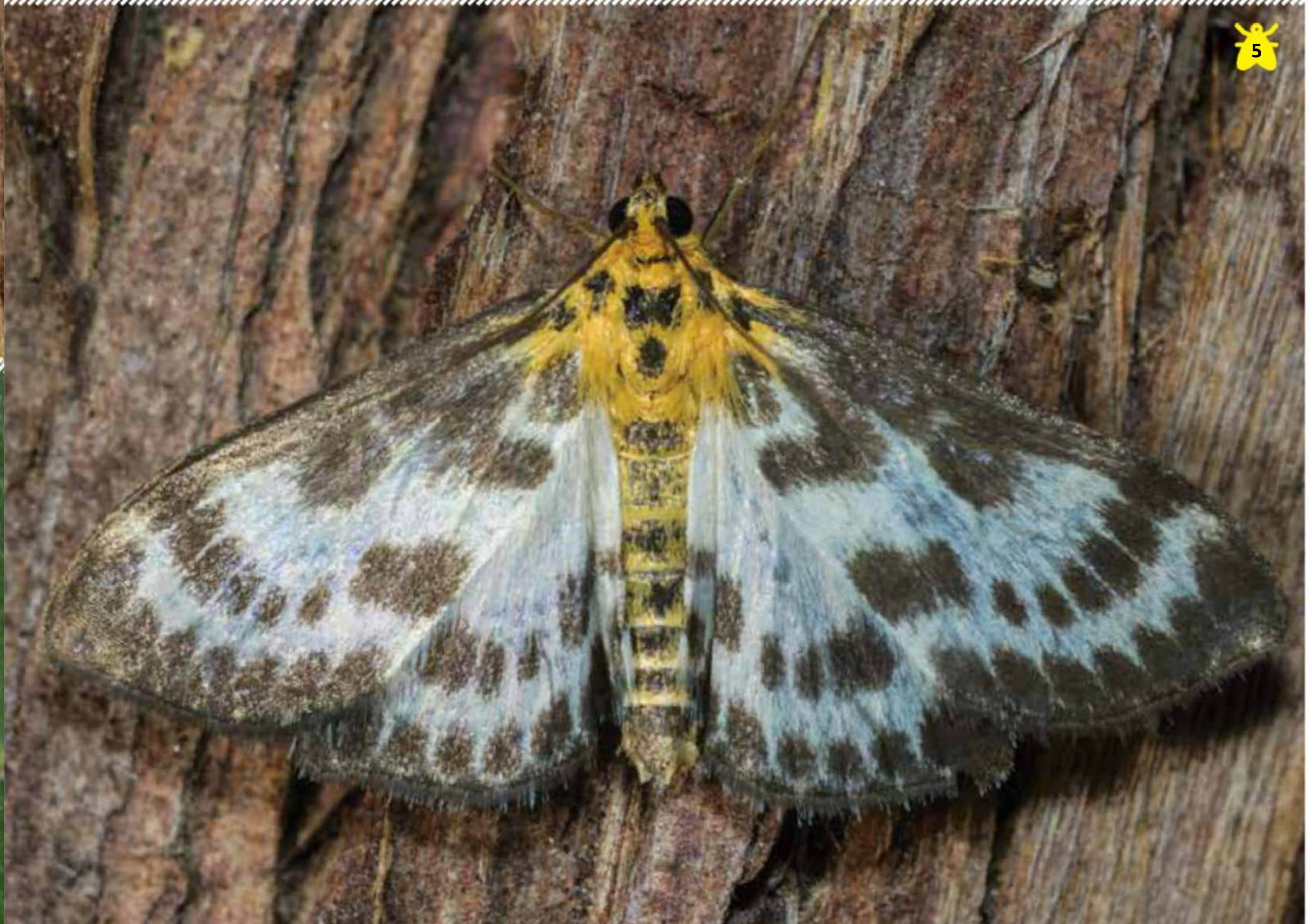
EVERY PART OF CANADA IS HOME TO MOTHS, FROM THE TEMPERATE SOUTH TO THE HIGH ARCTIC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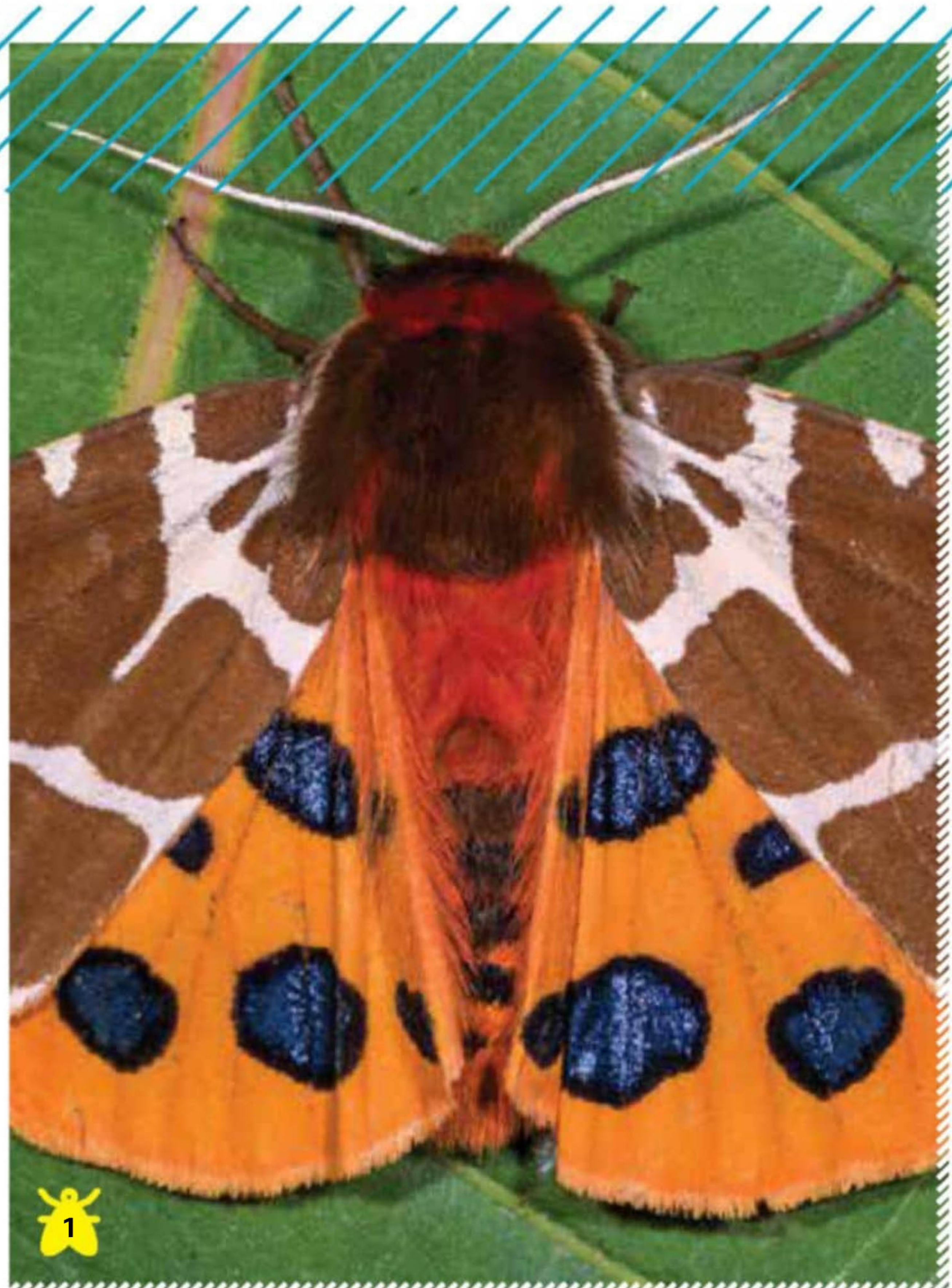
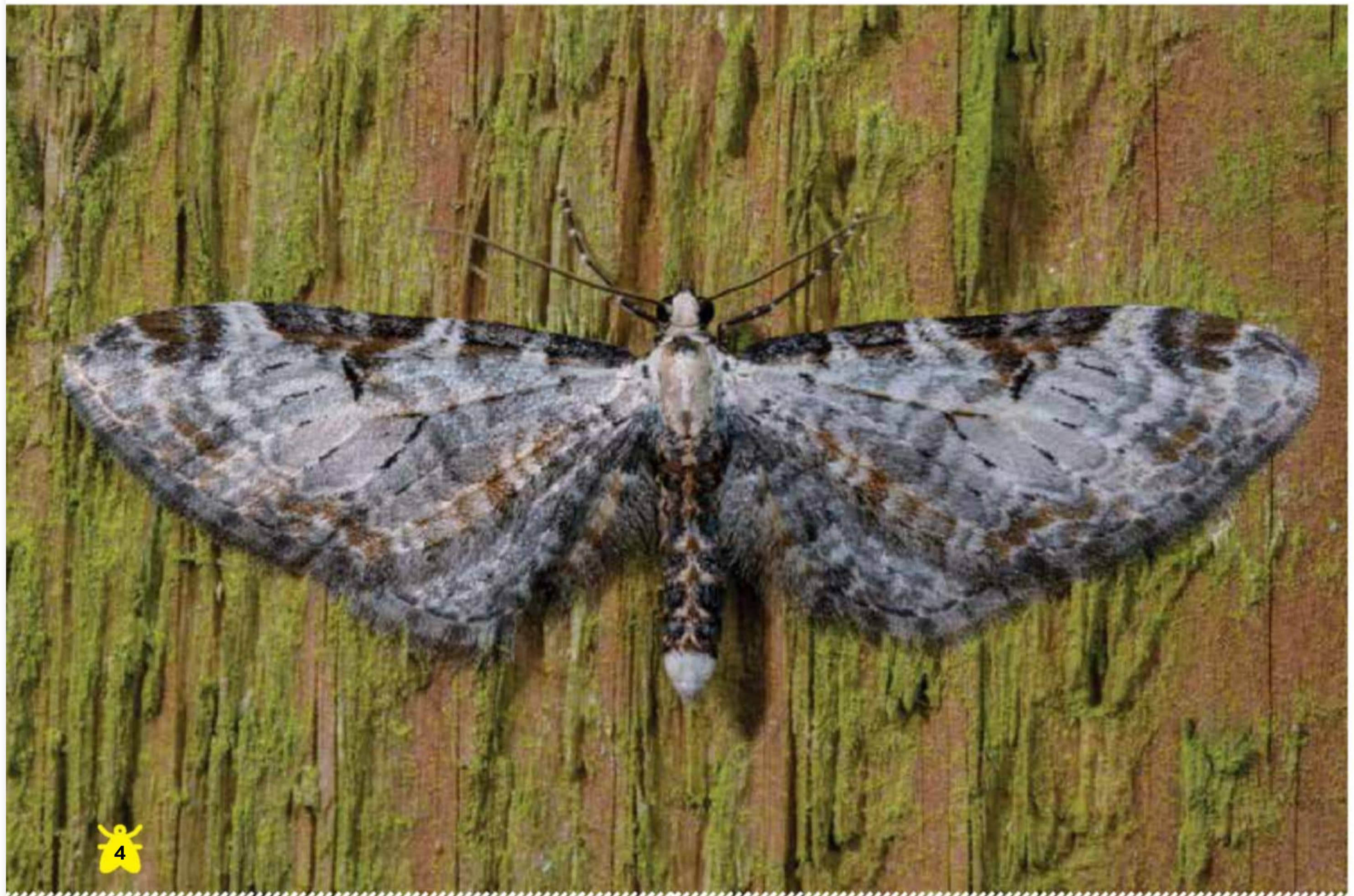
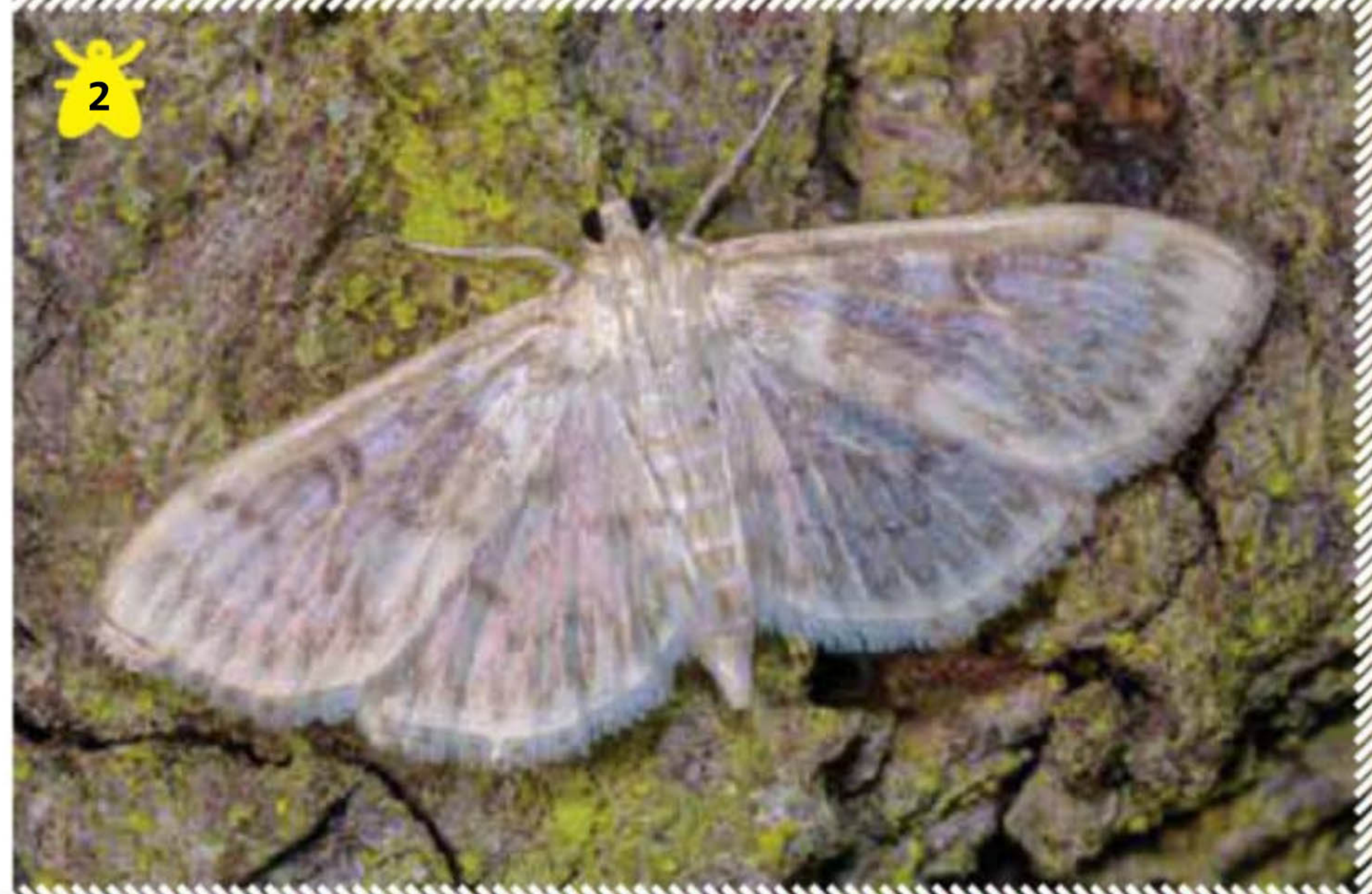
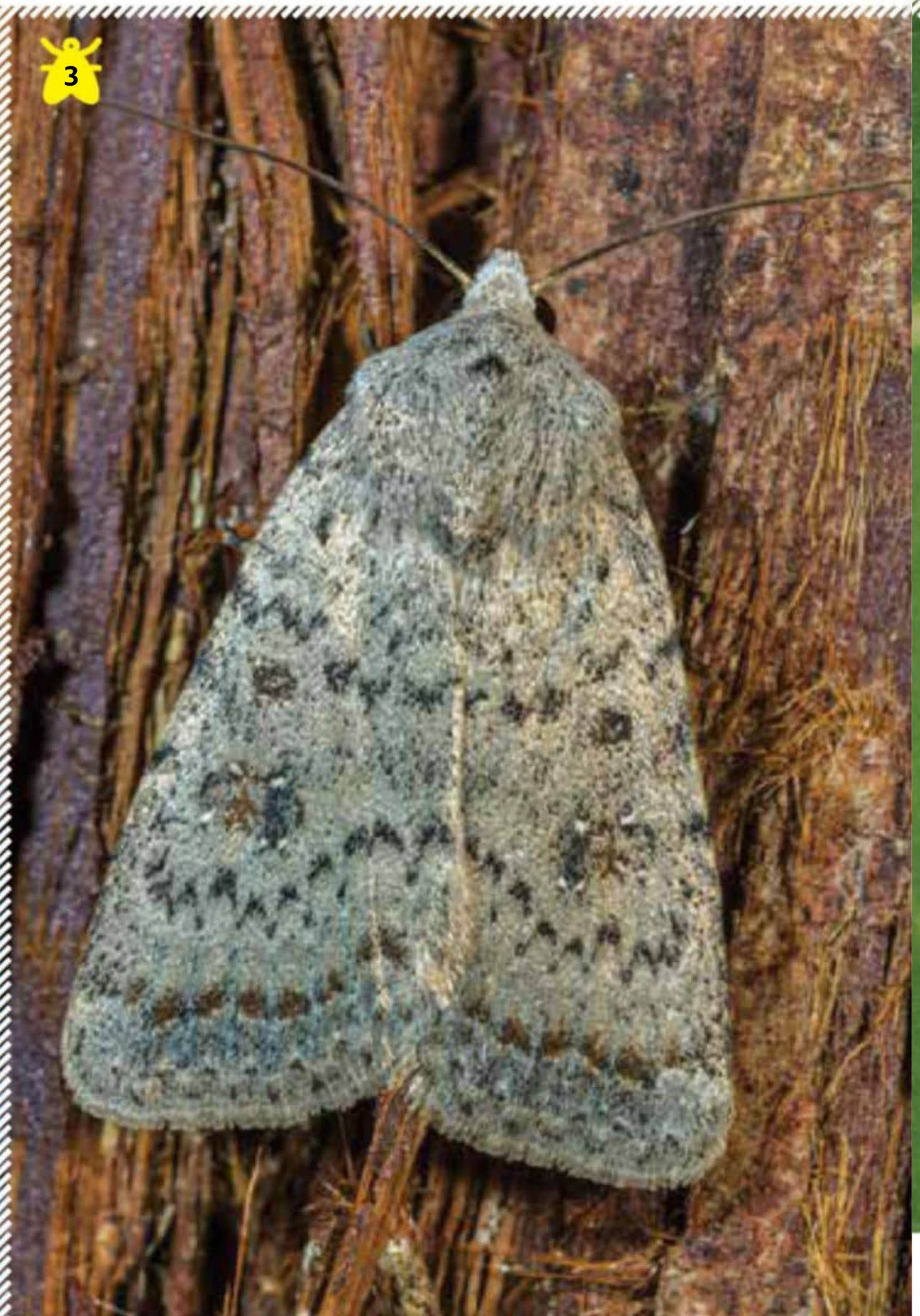
# A WHISPER OF MOTHS

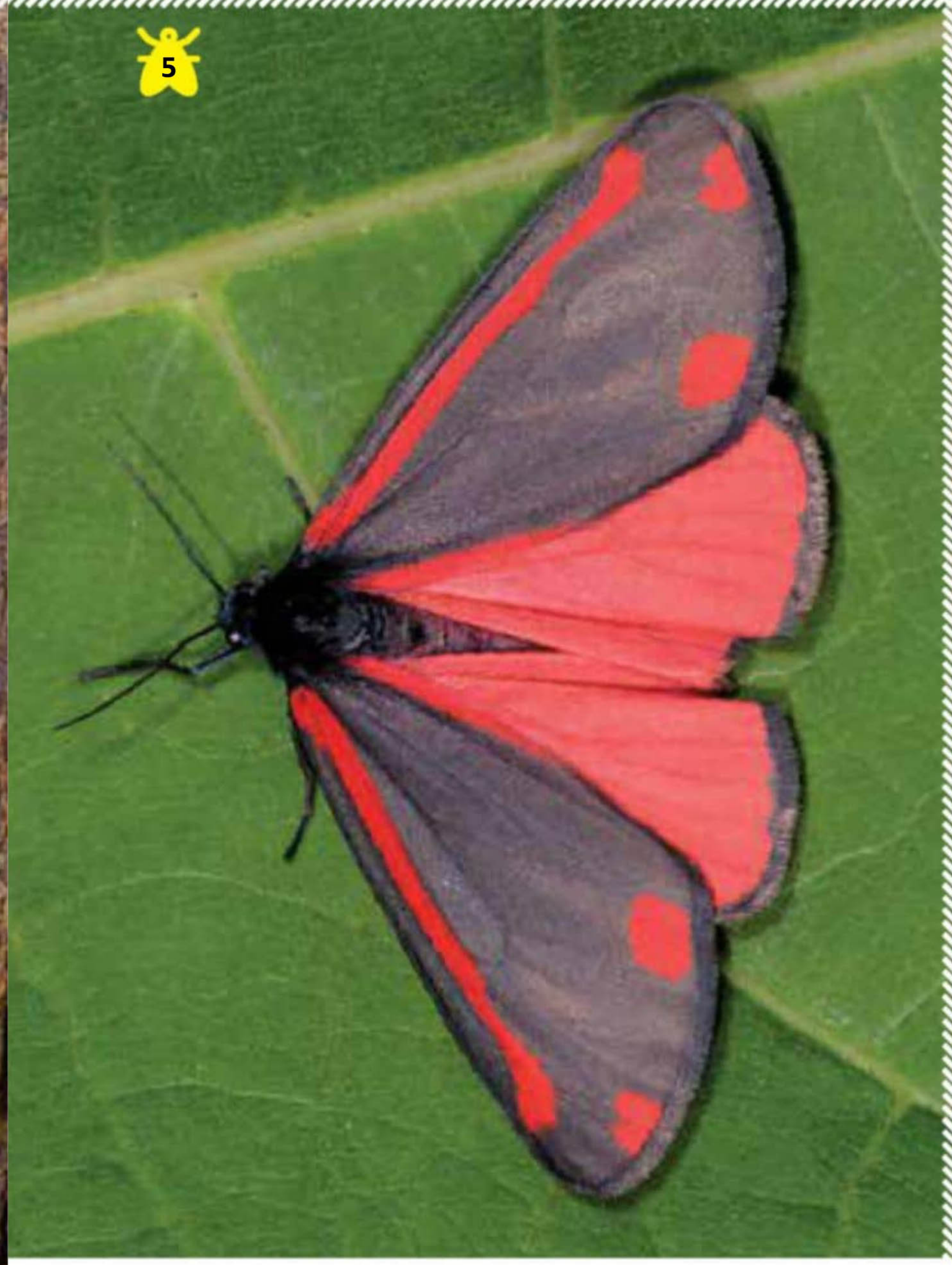
1. There are roughly 12,000 species of moths in North America, compared with fewer than 1,000 types of butterflies, the better-known members of the Lepidoptera family.
2. Moths are among this country's most important pollinators, including a species of clearwing that appears and behaves just like a hummingbird.
3. Many full-grown moths don't eat, and some don't even have a mouth. After exiting the cocoon, they might live for just a week to mate and lay eggs.
4. Moths' sense of smell can be incredibly powerful: certain species' females release pheromones that can be detected by the males' antennae 10 kilometres away.
5. Although moth caterpillars are detested for eating woollen clothing, just two species out of the several thousand in Canada actually feed on wool.

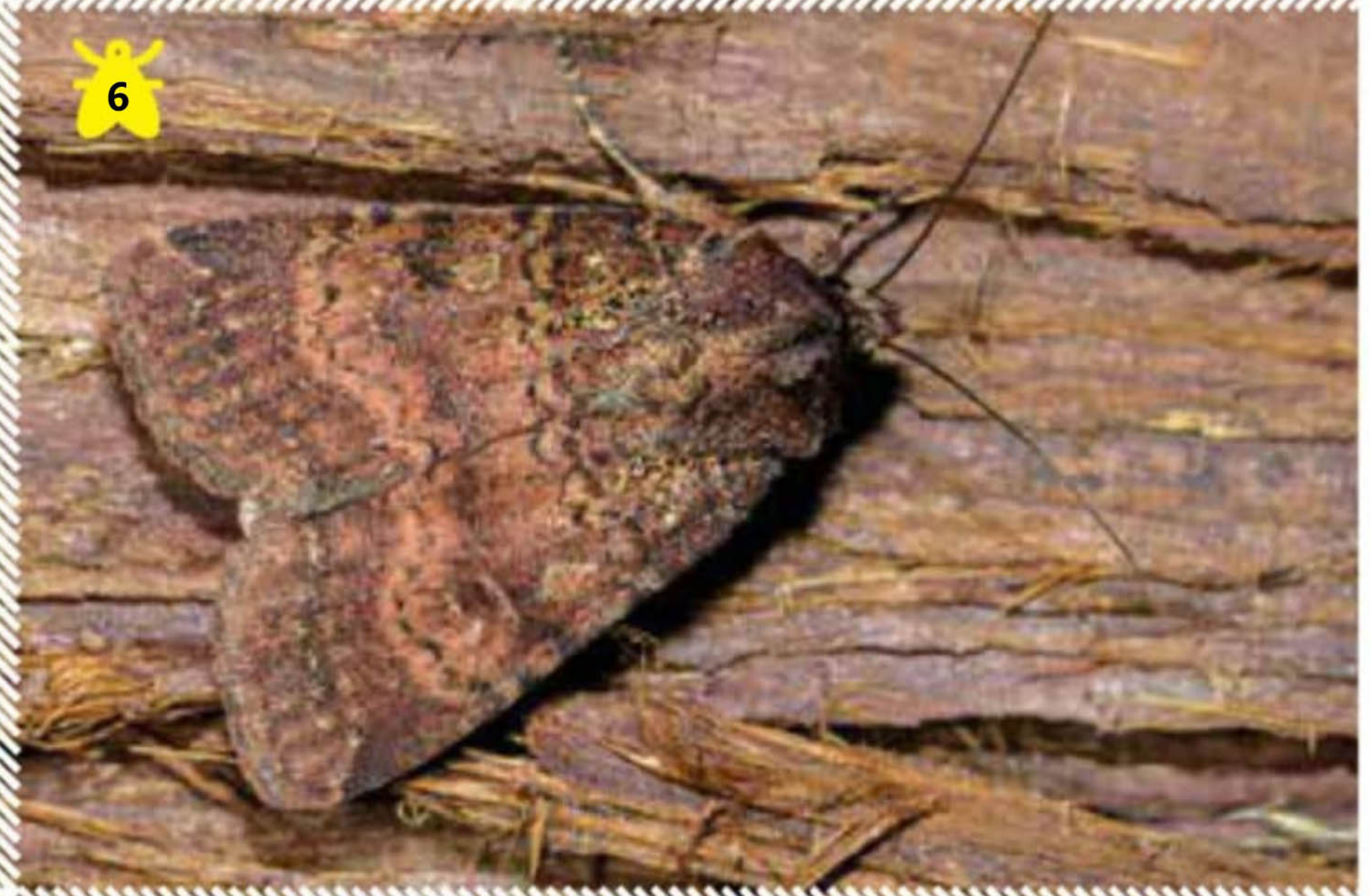


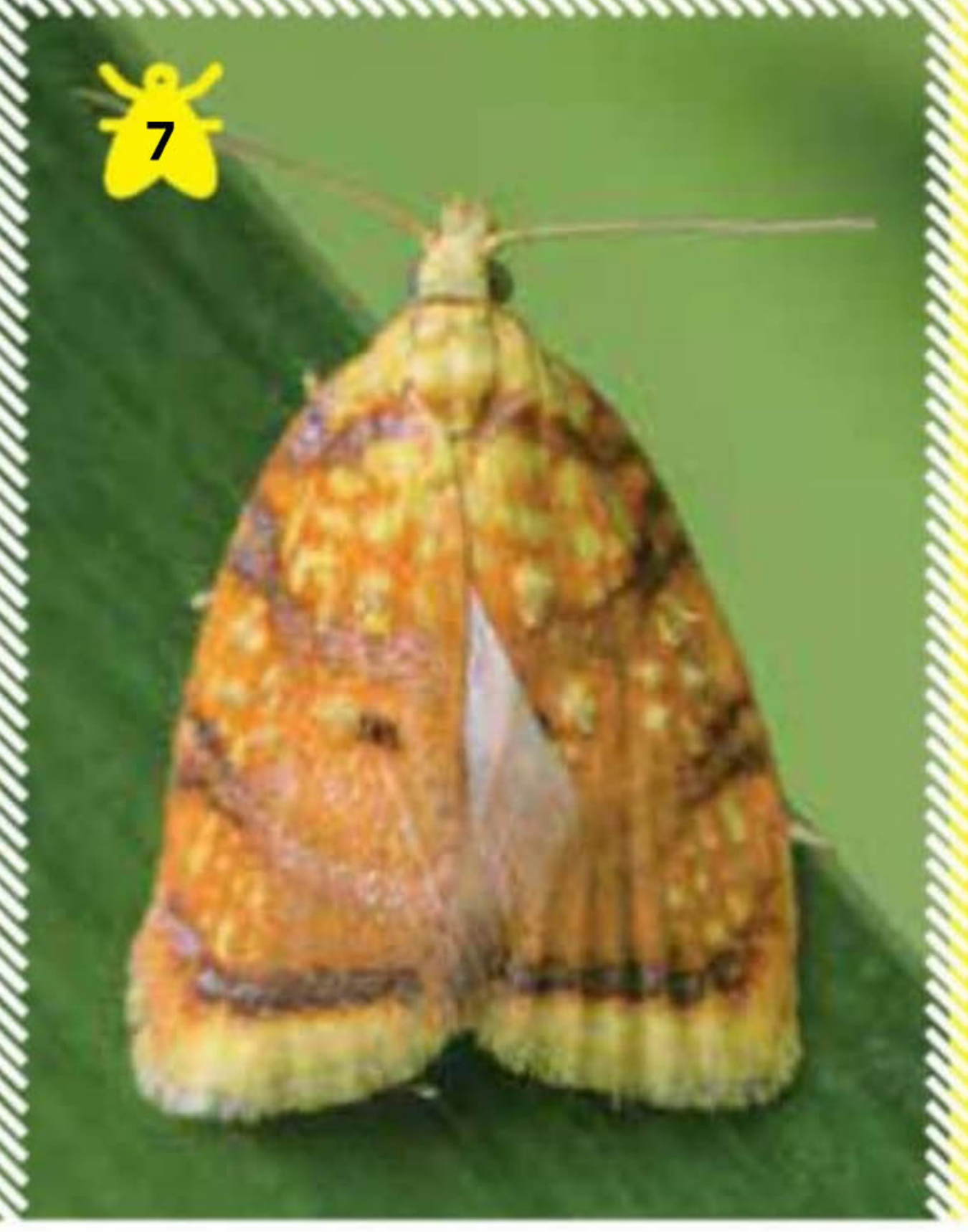








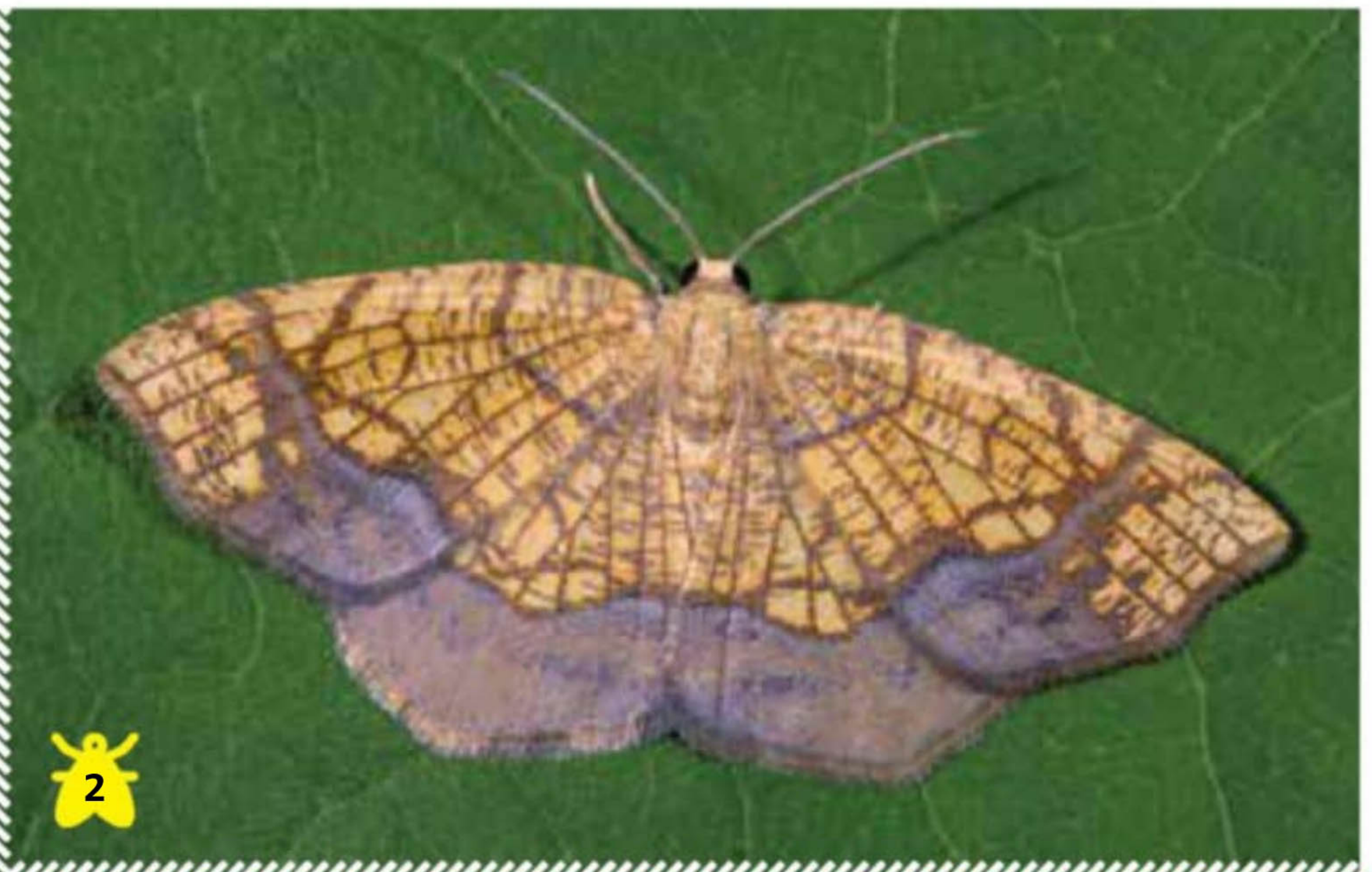




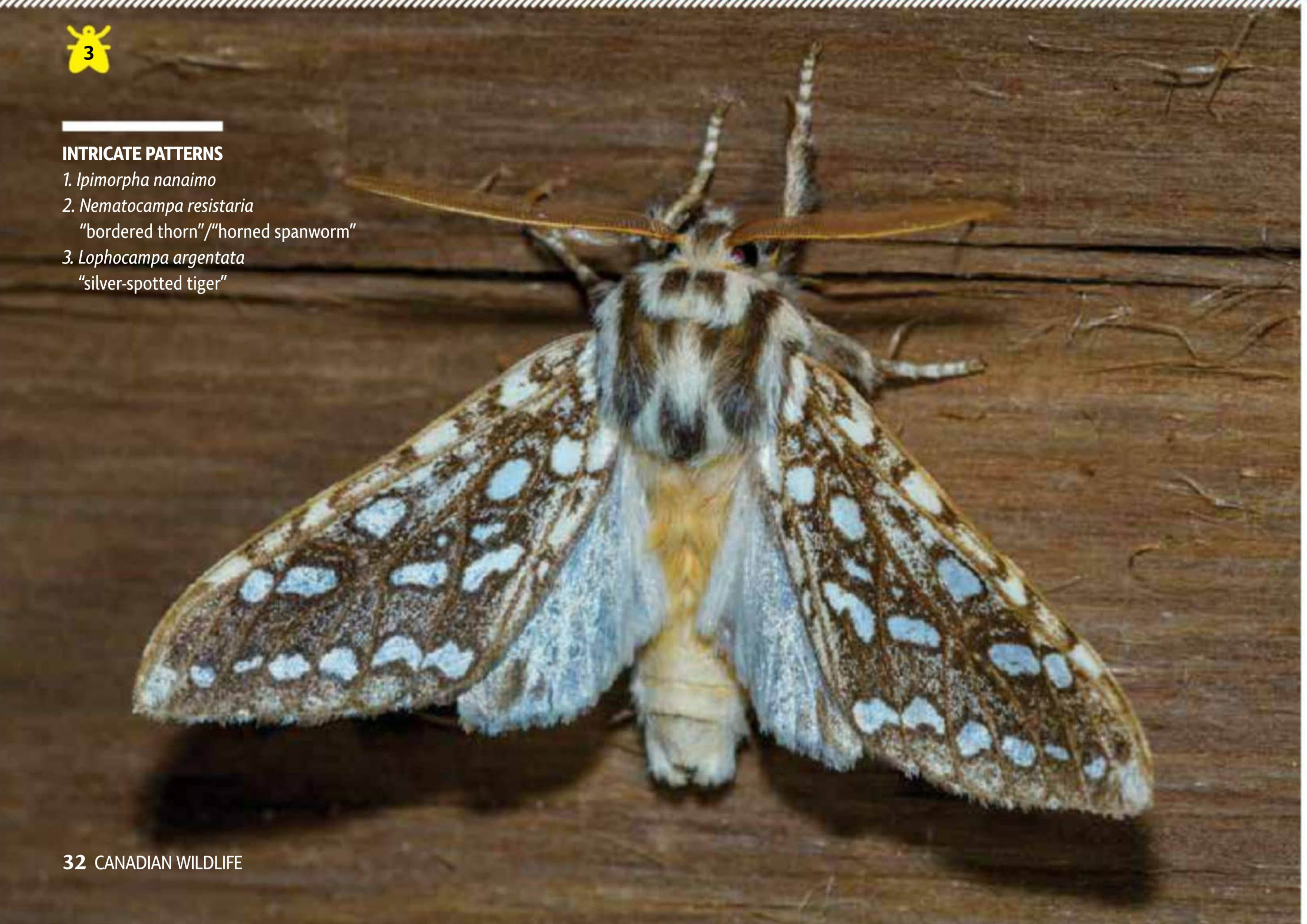
MOTHS CAN BE AS COMPLEX, FRAGILE AND BEAUTIFUL AS ANY BUTTERFLY, BUT ONLY RARELY ARE THEY AS FLASHY

**SURPRISINGLY BRIGHT**

1. *Arctia caja* "great tiger"/"garden tiger"
2. *Herpetogramma thestealis* "zigzag herpetogramma"
3. *Caradrina montana* "civil rustic"
4. *Eupithecia nevadata*
5. *Tyria jacobaeae* "cinnabar"
6. *Abagrotis apposite*
7. *Acleris albicomana* "red-edged acleris"



IN THEIR ROLE AS POLLINATORS, MOTHS ARE KEY, WORKING THE NIGHT SHIFT WITH GREAT EFFICIENCY



**INTRICATE PATTERNS**

1. *Ipimorpha nanaimo*
2. *Nematocampa resistaria* "bordered thorn"/"horned spanworm"
3. *Lophocampa argentata* "silver-spotted tiger"

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STOP
STEALING
MY FUTURE!

# YOUNG ACTIVISTS

## Inspired by a visiting wolf, siblings Finn and Chloe Unger have launched a campaign that is touching thousands

Text and Photos by Isabelle Groc

**CHLOE AND FINN UNGER WILL NEVER FORGET** that moment in spring 2016 when they looked outside their window in the morning and saw a lone wolf sitting outside on their farm property in Sooke on southern Vancouver Island: "I looked out the window, and he was just sitting right here looking out over the field, and the sun was lighting him up," Finn says. "He knew we were watching him because he would turn his head and look up at us, but he would just sit there anyway. It was really magical."

The brother and sister saw the wolf three days in a row, and then the animal wandered away. They never saw the wolf again. But the appearance changed their lives forever. "It was a very powerful experience," Chloe says. "It made us want to get more involved in protecting the environment."

The two siblings — Finn is now 12 and Chloe 16 — were surprised to see how others in the community who also saw the wolf reacted to its presence in their backyards."We were blown away to see this incredible predator," says Chloe now. "But people started saying that this creature had to be killed because it was going to hurt them. It spoke to us as just the way society is so disconnected." The children wondered why humans could not live in harmony with wolves, and embarked on a mission to change public perceptions. "It felt like this wolf had come to give us a message that it wanted us to speak for its kind," Chloe says.

Soon after, Chloe and Finn launched Project Howl (Help Our Wolves Live) to raise awareness about wolves and the role this keystone species plays in maintaining the local ecosystem of the Sooke region. They learned as much as they could about wolves, were invited to speak at a local TED-style talk, gave presentations at different community events, wrote letters to the government and started a petition to stop the wolf cull in British Columbia. They were surprised to discover that the Royal BC Museum did not include a wolf in the natural history exhibit that highlights British Columbia's different ecosystems and species, and so they started a campaign to convince the museum to acknowledge wolves' role as a keystone species and give the animal a place in the exhibit.

The children's encounter with the wolf opened up their eyes to the importance of protecting wildlife corridors and intact wild spaces. "The wolf had to go through a lot of urban areas because the wildlife corridors had gotten so small," Finn says.

These young environmental activists understood that to make a meaningful difference for wolves and other species, their campaign had to focus on habitat protection. "Jane Goodall says that to make a global effect, you have to make a local effect, so we decided to start from our own place, where we live," Finn says.

Chloe and Finn began networking with other activists and biologists from the Coexisting with Carnivores Alliance, which was interested in mapping wildlife corridors in the local region to advocate for better protection. With the help of a naturalist friend, they installed three trail cameras to document the animals that use the wildlife corridor through their 56-hectare family farm. As they analyzed the camera footage, they discovered the high diversity of the wildlife that visited the DeMamiel Creek flowing through the property: black bears, cougars, beavers, elk, deer and rabbits. They now hope to use their sightings data as the basis for a presentation to the District of Sooke to advocate for more protection of the local wildlife corridors and a moratorium on development of the DeMamiel Creek.

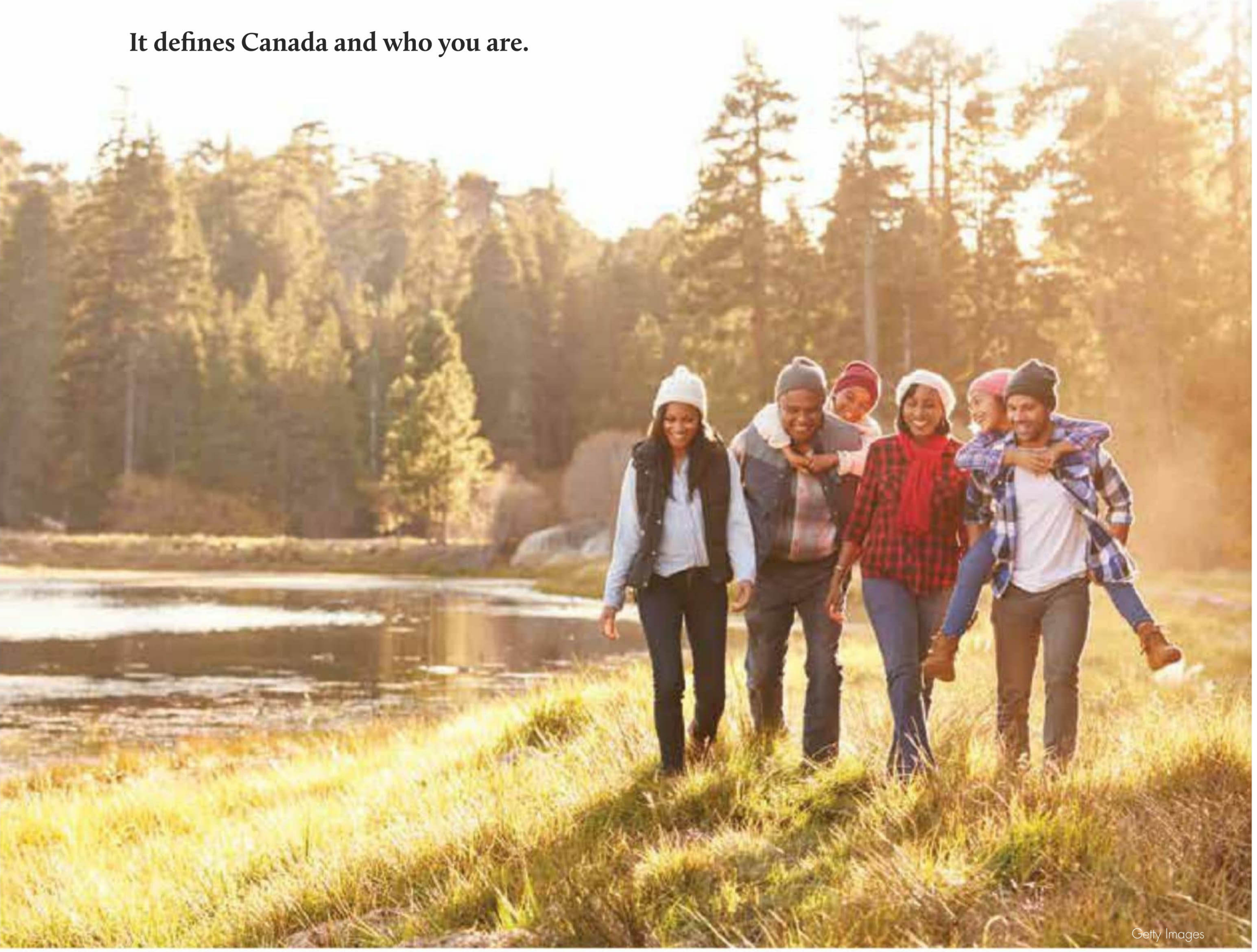
The siblings sometimes feel discouraged by the lack of response from politicians and the length of time it takes to achieve any results. "It hits you hard in the heart," Chloe says. But they find hope in following Swedish teenage climate activist Greta Thunberg and attending youth climate events in Victoria. "Everyone starts thinking you are only one person who cannot do anything. Then you just take a look at Greta and you realize that one person can do a lot," Chloe says. "Every person counts. Be bold and be loud."

Your Legacy can Change the Future

By creating your legacy to support the future work of the Canadian Wildlife Federation, you can help CWF continue its critical conservation work and education programs without affecting your current finances or financial plans. There are many ways to create a Legacy Gift in your estate planning, allowing you to choose the one that is best for you.

Make this decisive act to conserve Canadian wildlife and its habitat far into the future.

**It defines Canada and who you are.**



Getty Images

For more information, contact:

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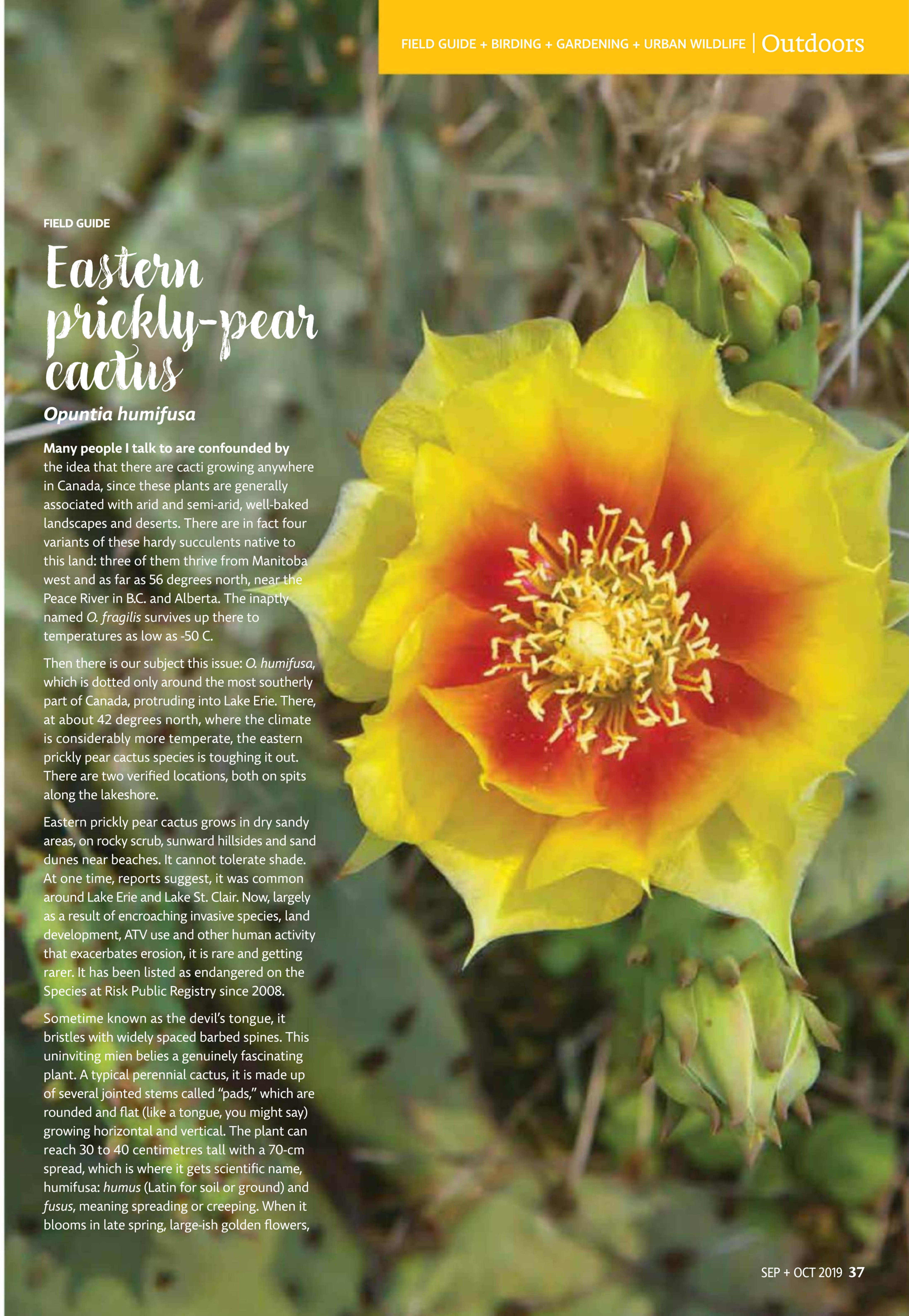
CANADIAN WILDLIFE FEDERATION

JAMES MUNDY, NATURE'S ARK PHOTOGRAPHY/ALAMY STOCK PHOTO



FIELD GUIDE

# Eastern prickly-pear cactus

***Opuntia humifusa***

**Many people I talk to are confounded by** the idea that there are cacti growing anywhere in Canada, since these plants are generally associated with arid and semi-arid, well-baked landscapes and deserts. There are in fact four variants of these hardy succulents native to this land: three of them thrive from Manitoba west and as far as 56 degrees north, near the Peace River in B.C. and Alberta. The inaptly named *O. fragilis* survives up there to temperatures as low as -50 C.

Then there is our subject this issue: *O. humifusa*, which is dotted only around the most southerly part of Canada, protruding into Lake Erie. There, at about 42 degrees north, where the climate is considerably more temperate, the eastern prickly pear cactus species is toughing it out. There are two verified locations, both on spits along the lakeshore.

Eastern prickly pear cactus grows in dry sandy areas, on rocky scrub, sunward hillsides and sand dunes near beaches. It cannot tolerate shade. At one time, reports suggest, it was common around Lake Erie and Lake St. Clair. Now, largely as a result of encroaching invasive species, land development, ATV use and other human activity that exacerbates erosion, it is rare and getting rarer. It has been listed as endangered on the Species at Risk Public Registry since 2008.

Sometime known as the devil's tongue, it bristles with widely spaced barbed spines. This uninviting mien belies a genuinely fascinating plant. A typical perennial cactus, it is made up of several jointed stems called "pads," which are rounded and flat (like a tongue, you might say) growing horizontal and vertical. The plant can reach 30 to 40 centimetres tall with a 70-cm spread, which is where it gets scientific name, humifusa: *humus* (Latin for soil or ground) and *fusus*, meaning spreading or creeping. When it blooms in late spring, large-ish golden flowers, often with red centres, appear along the edges of the plant's mature pads. They are remarkably attractive—to humans and to pollinators.

Oddly, its juicy fruit, which in no way resembles a pear, is called a "fig." About 3-to-5 cm long, it is green until ripened in the fall, when it turns a warm reddish-brown. The fruit often remains on the cactus until the following spring. Each fig has as many as 30 small seeds. Where common, it is a staple food source for many species of birds and insects, as well as bears and other mammals. Like so many, I first learned about the prickly pear from a bear, indeed a singing bear—Baloo, that is, in the animated 1967 film *The Jungle Book*. I can still hear the mellifluous voice of Phil Harris singing, "Next time beware/Don't pick the prickly pear by the paw/When you pick a pear/Try to use the claw." Solid advice.

From Rudyard Kipling (via Walt Disney), we turn to T.S. Eliot, who in his bitter poem "The Hollow Men" replaces mulberry bush in the child's song to scan "here we go round the prickly pear, the prickly pear, the prickly pear" in a macabre and desolate scene, a desiccated mockery of the naive optimism of the youthful ditty.

Today, prickly pear is a food staple, eaten raw or cooked. *Opuntia ficus-indica*—*O. humifusa's* taller, domesticated cousin—is a popular cash crop in Mexico and throughout South America. The prickly pear's water-rich seeds, leaves and fruit are all excellent and inexpensive sources of calcium, fibre, proteins, essential amino acids and vitamins. Several studies have found it helps reduce bad cholesterol and triglycerides, while other studies have concluded that taken prior to alcohol consumption, it can lessen the effects of a hangover. Traditionally, it was used by Indigenous peoples to treat wounds, warts and respiratory ailments. Today, the plant is being studied as a prophylaxis against colon cancer, while some researchers have shown that it can increase bone density and that it could be useful in mitigating hypoglycemia and hypolipidemia.

Because of its capacity to thrive in the most arid conditions, the plant has recently been bruited about as an ideal crop in time of global heating and desertification. It is a robust species capable of withstanding high heat, drought and poor soil while effectively capturing carbon and offering high nutritional value.

For the small clusters of eastern prickly pear still found in Canada, efforts continue to ensure their survival. Since 2010, Parks Canada has worked to stabilize the Lake Erie Sand Spit Savannah ecosystem to improve the critical eastern prickly pear habitat by reducing dogwood thickets, removing invasives, using controlled fires and planting native savannah species. For this plucky, determined species clinging to a tiny foothold in Canada, the struggle continues. —**MEL WALWYN**

BIRDING

# The State of Our Birds

## A new report suggests Canada's birds need our attention

*Meadowlark*

ISTOCK

**When Rodger Titman and I, both retired** now after having taught ornithology and other wildlife courses together at McGill University for over 35 years, jointly give our annual spring weekend course on birds for the general public at the Swan Lake Christmas Hill Nature Sanctuary near Victoria, B.C., I often introduce us as follows for a chuckle: "Rodger studies ducks, and I study the birds who eat them."

To explain, even after 45 years, Rodger is still a keen and active waterfowl researcher, and I continue to study birds of prey in any way I can. So, when we read the headlines on the State of Canada's Birds 2019 report, just released by the North American Bird Conservation Initiative in Canada, stating that populations of birds of prey and waterfowl are up by 150 and 110 per cent, respectively, it would have been easy for us both to feel smug about it. However, we do not, simply because we like *all* birds.

You see, along with much more modest increases in some wetland species, a few seabirds, and slightly more than half of the forest birds, the news about birds of prey and waterfowl is the good news. The bad news is that an equal number of Canada's birds are in a serious state of decline, particularly shorebirds, grassland birds and aerial insectivores.

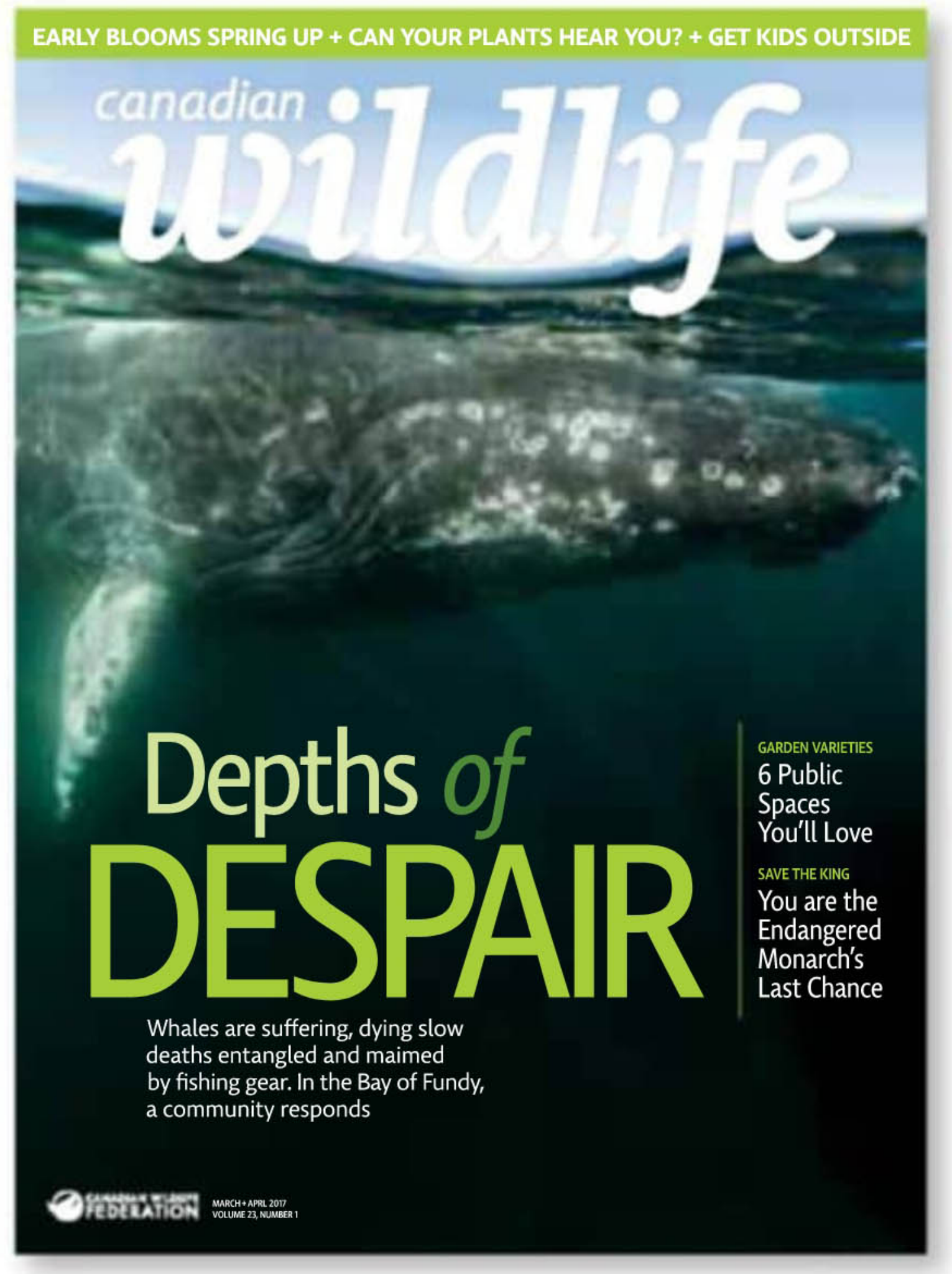
The report, the first since 2012, shows population changes from 1970 to 2016 for 449 Canadian bird species. Because of a lack of data, trends in seabirds remain somewhat of a mystery, but 55 of 58 species that inhabit Canadian waters are of conservation concern or threatened with extinction. Of Canada's 47 shorebird species, 25 are in trouble, including ruddy turnstones, red knots and western sandpipers. Grassland birds have declined by 57 per cent overall; a good example is the meadowlark, a bird I used to see commonly as a child in fallow farm fields long since replaced by the concrete of Toronto's urban sprawl. Aerial insectivores like the barn swallow and the common nighthawk have been hit the hardest, likely the result of agricultural intensification, declining insect populations and changes in climate that have affected everything from breeding to wintering grounds.

In contrast, geese populations, which are up by a whopping 300 per cent, are benefiting largely from waste grain availability, and ducks and other wetland species are benefiting from improved stewardship of their aquatic habitats and better harvesting management. Raptors have rebounded mainly thanks to the banning of organochlorine insecticides, but to my mind, their amazing adaptation to human-altered environments, especially urban habitats, is also important.

So, what can you do to create more positivity in the next report? Well, it might not be easy to reverse climate warming, but lessening your dependence on fossil fuels is a start. Saving natural bird habitats from the greedy fingers of progress is also critically needed but takes a group effort.

Here are some more immediate and simple things you can do on your own: try to consume local foods from sustainable sources, drink bird-friendly coffee, reduce your use of pesticides and other chemicals, substitute plastic bags and cups with reusable bags and drinking containers, control your pet cats, and reduce window collisions. Last, find a way to give some time as a citizen scientist to gather valuable information on birds; two-thirds of the data in the 2019 report came from volunteer sources.

Why should you care? For myriad reasons, we need birds and their habitats. And if the world is unfit for them, it is surely unfit for us. —**DAVID BIRD**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GARDENING

# After the Fall

**With autumn comes harvest and the gradual winter shutdown. While your garden may be dormant, it is still an essential source of food and shelter. Winterize your plot with wildlife in mind**

ISTOCK

**Harvest time. After all the careful planning, hard work and** hopeful monitoring, the fruits (and vegetables) of your labours are available to enjoy.

Once your bounty has been reaped and the season is winding down, your garden can keep feeding and sustaining many creatures. Indeed, your dormant garden can be the difference between life and death for a wide array of beneficial bugs, birds and small creatures.

It is actually quite simple for you to support wildlife through darkest winter. Once your garden is done, leave off cleaning and tidying up until spring (ideally a week or two after thaw, so that dormant species have time to rouse themselves). That means this fall, do not remove dried-out flower stalks and plants, leave the piles or layers of leaves and mulch, let stand the old and dead tree limbs and branches (unless unsafe, of course), fallen logs and rock piles, and preserve patches of dense wild grass and wildflowers. Leave them be.

Migrating birds and butterflies need food when preparing for fall journeys and when they arrive in the spring. Seedheads and shrivelled and frozen fruit left on dried plants are essential to sparrows, finches, jays, chickadees, nuthatches and grosbeaks, among many others, so populate your garden with regionally native plants that flower or bear fruit in different seasons to help them out. Once migrating birds have headed south, your garden will still be supporting local birds like blue jays, cardinals, cedar waxwings and chickadees. It helps them survive… and keeps your garden alive all winter long. Reliable food resources during long periods of wintry weather not only ensure their survival, they aid breeding come spring.

Bird-friendly native seed species in winter include goldenrod, asters, cone flowers, sunflowers and black-eyed Susan, as well as berry-producing shrubs such as dogwood and viburnum. If you have the space, the sumac (*Rhus*) and its fuzzy red fruit is popular for many species (and beautiful to look at in dreary midwinter).

When it comes to beneficial bugs, there is a lot your lot can offer. While many insects migrate to avoid winter weather, you might be surprised how many bugs overwinter, albeit in different forms: in an egg, as larva or pupa, or even as an adult. They need sheltered spots to survive the chilly conditions. By leaving piles of mulch and leaves, rotting logs and old trees, you are offering the perfect refuge from the cold. Depending on where you live in Canada, native species of bees may use your garden to overwinter. Some will seek refuge under piles of bark and leaves, others will nest in cavities in hollowed-out branches and trunks, and in and around decomposing logs, and still others will burrow into the soil. Depending on the region, they will likely share the space with mice and voles, snakes and toads, beetles and others.

Butterflies too will be glad to overwinter in your garden. Numerous species (including the swallowtail and sulphur butterfly) remain in their chrysalises until spring, sheltered among vestigial leaves and stalks, or insulated under blankets of soil and humus. Some even live through the cold months as adults by nestling into deep piles of leaf litter, chunks of decaying tree bark and cavities. These hardy butterflies include mourning cloaks, eastern commas and Millbert's tortoiseshells.

To give resident and returning pollinators a leg up once the spring thaw begins, this fall consider adding to your garden a few plants that flower early in the spring, providing nectar and pollen when it might be sparse—such as amelanchier (service or saskatoon berry), cherries, hawthorns and willows.

This fall, as your garden winds down, do less: minimizing maintenance will allow your garden to continue through the winter as a life-sustaining oasis of food and shelter from the cold.

*This material was drawn from the Canadian Wildlife Federation website. The comprehensive Wildlife-friendly Gardening Guide, produced by CWF, is available as a PDF download at **cwf-fcf.org**.*

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DARREN LANGLOIS

The new Samuel de Champlain Bridge

ISTOCK

URBAN WILDLIFE

# Peregrine Nation

## The falcons resident on the new Champlain bridge are the latest in a long tradition of Montreal raptors

**There was a flurry of excitement in Montreal in June, when the** spectacular new Samuel de Champlain Bridge opened to traffic. Not only did the graceful span bridge come in on budget (nearly) and on time (nearly), it is lovely to look at. For that and other reasons, it is a huge improvement on the crumbling iron bridge it is replacing, and that is due to be torn down in 2020. But before it can come down, officials have to ensure that all the old bridge's unofficial residents have left.

Like many bridges in North America, the former Champlain bridge, spanning the St. Lawrence River since 1962, was home to countless birds. American cliff swallows (*Petrochelidon pyrrhonota*) in particular were drawn to the underside, where they could build mud nests in protected nooks, forming one of the largest colonies in the province of Quebec. Several peregrine falcons (*Falco peregrinus*), also drawn to cliffs to create their nests, had taken up residence on the bridge too, using retrofitted platforms to build their considerable nests. An abundance of wildlife nearby made for excellent hunting for these crow-sized birds of prey with acute vision, extreme speeds and amazing agility.

With the transition to the new structure underway, the corporation that operates several of Montreal's bridges brought in environmental consultants and ornithologists to minimize disruption to the birds during the construction and to help move them before the eventual teardown. The experts recognized the new bridge's design was not going to be welcoming to the cliff swallows, offering few of the crannies that are so essential to them, so they had elements added to an adjacent ice control structure and bike path nicknamed the Ice Bridge. By the time the old Champlain bridge had been replaced, more than half the swallows had already decamped to the new setting. The transition went smoothly.

For the falcons, they get to move to the new bridge, and it is a bit like moving into a new custom-built home. Large protected, falcon-friendly platforms tucked away from most human access were designed with the wary and territorial raptors in mind (for the safety of the birds and unwitting maintenance workers). The locations are primarily over land, not water, to ensure the young fledglings' (called eyases) first flights do not end in a drowning. While the process of relocation has begun, falcons are creatures of habit, with generations returning to the same roosting site (there's a cliff ledge in Lundy, an island off the coast of Devon in the U.K., that is said to have been consistently occupied since the year 1243). There may be some returnees right until the moment the bridge comes down in 2020.

Montreal has an interesting history accommodating falcons. In a recent article co-authored with several international colleagues, McGill University professor emeritus and *Canadian Wildlife* magazine bird columnist David Bird (yes, it is his real name) recounted the tale of Scarlet, a groundbreaking raptor. In 1937, she and a partner were discovered nesting on a ledge on the 20th floor of Montreal's iconic Sun Life building. The raptors were perceived as a curiosity and a nuisance (and occasionally a menace to building maintenance people), and people didn't know what to do. For several years, the falcon returned to roost, and each time most of the eggs rolled away and smashed on the ground. It was in 1940 that someone had the bright idea of placing a box filled with sand to catch and cradle the eggs, for Scarlet to then incubate and hatch. As Bird et al. point out, this constituted "the very first recorded act of managing raptors in an urban setting!" Scarlet and three different mates returned there every year until 1952, rearing 21 young. Since then, peregrine falcon populations have increased in urban centres throughout North America and have extended to all year, thanks to warmer urban winter temperatures, abundant year-round prey, a scarcity of natural predators and helpful humans.

Urban raptors face different perils than their rural cousins. Bird cites a review of 160 peregrine deaths around North America that found that 40 per cent of fatalities were a result of building collisions, reflective glass being every urban bird's mortal enemy. Also, fledglings often end up on the ground, exposed to traffic, predation and starvation. Other types of collisions, with vehicles, transmission wires or aircraft, all represent existential threats as well. Nonetheless, thanks to dedicated efforts of passionate volunteers, following in the footsteps of whoever it was who placed the sandbox for Scarlet's eggs out on a ledge of the Sun Life building in 1940, peregrine falcons are thriving in Montreal, including the inaugural residents of the new Samuel de Champlain Bridge.—MATTHEW CHURCH

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# Highlights of our 2018-2019 Successes

The Canadian Wildlife Federation's last fiscal year was a period of significant achievement and growth. We saw the impact of our work as our recommendations to help conserve North Atlantic Right Whales continued to influence government action on fisheries closures and ship speeds. Our pollinator research involved working alongside the agricultural community, power generating companies and municipalities to create and restore critical habitat for pollinators. We rallied almost 100,000 supporters and other Canadians to join together to seek a ban on neonicotinoid pesticides that are harming our pollinators, aquatic insects and other wildlife. Here are a few more highlights from 2018-19.

**During the 2018-19 fiscal year, CWF engaged over 700,000 individuals through programs, events and initiatives. We reached over 3.3 million people through fundraising, marketing and communications.**

CANADIAN WILDLIFE FEDERATION

## CONNECTING CANADIANS TO NATURE

**Canadian Conservation Corps**
CWF's Canadian Conservation Corps offers youth aged 18 to 30 the opportunity to join a unique three-part program that includes a wilderness journey, field training with leading conservationists and planning their own community-based conservation service project in their hometown. CCC has directly engaged over 70 young adults in all regions of the country and indirectly reached more than 10,000 people across Canada.

**WILD Education**
Working with the Association of Fish and Wildlife Agencies in the U.S., CWF began the process of redeveloping WILD Education to meet the needs of current educators in Canada. The program will include two new modules: (1) a short introduction to nature education that will focus on simple steps any teacher can take to bring nature education into their classroom, and (2) a theory and practice workshop that will show the educational benefits of conservation education. We will address distance education needs to ensure the new materials are available in all regions of the country.

**WILD Family Nature Club**
The greatest single predictor of adult conservation behaviour is time spent outdoors as a child with a trusted adult. In 2018-19, CWF's WILD Family Nature Club offered programming in 19 communities to provide opportunities for young families to explore and play in nature together.

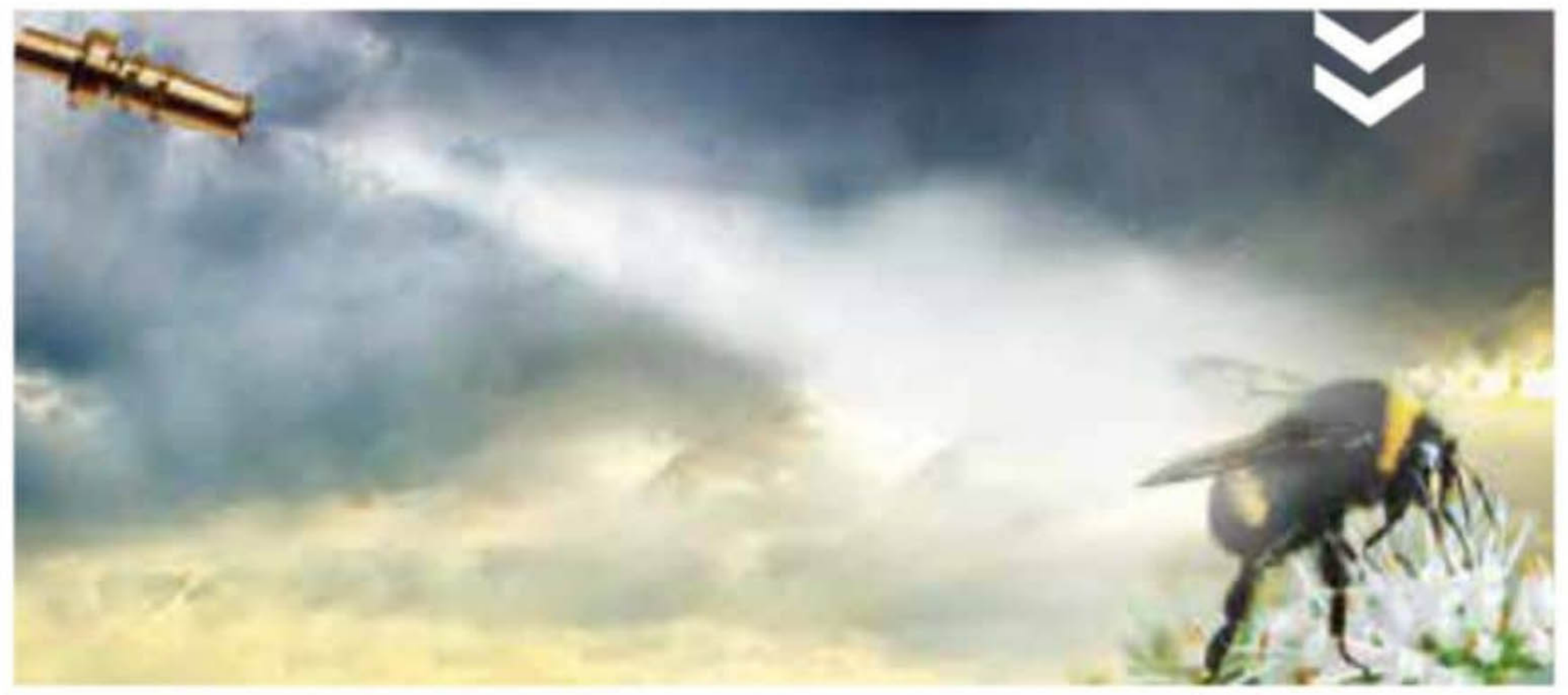
**WILD Spaces**
CWF engaged 12,871 students through WILD Spaces — a program that gets classes involved in planting pollinator gardens and learning about the value of wildlife-friendly gardening.

# Highlights of our 2018-2019 Successes

**Garden Habitat Certification**
Garden Habitat Certification continues to connect our supporters with a conservation ethic close to home. In the last 20 years, CWF has certified more than 1,500 gardens across Canada, with 500 of those certifications granted in the past two years.

**Hinterland Who's Who**
Hinterland Who's Who remains one of Canada's most iconic and popular public service announcement programs, bringing wildlife information and awareness into the homes of Canadians across the country. In 2018, HWW released two new PSAs — the Common Raven and the Chorus Frog — and began developing a new App for children called The Wild Gang. The App will feature content from both HWW and *WILD* magazine, including PSAs, video games, scavenger hunts, projects and activities.

**Ban With A Plan — Government Petition and Campaign**
In summer 2018, CWF launched a petition calling for a legislated national ban on the use of neonicotinoid pesticides that are harming our pollinators and other wildlife. Close to 100,000 CWF supporters and Canadians signed our petition; with this united voice, we delivered a strong message to the Government of Canada. In spring 2019, Health Canada announced plans to cancel certain uses of three forms of neonicotinoids — imidacloprid, thiamethoxam and clothianidin — to address risks to pollinators.



## RESTORING AND IMPROVING WILDLIFE POPULATIONS AND HABITAT

**Aquatic Habitat Canada**
With the support of funding from Fisheries and Oceans Canada, CWF launched a new partnership — Aquatic Habitat Canada — a national network focused on helping governments, local communities, Indigenous organizations, industry stakeholders and conservation organizations to more effectively protect and restore healthy and resilient aquatic ecosystems. Aquatic Habitat Canada's work is delivered under four core themes: restoration planning and prioritization; resources and capacity-building; knowledge synthesis and transfer; policy and program implementation.

**Amendments to Bill C-68 Fisheries Act**
CWF actively participated in all consultation opportunities offered by the Department of Fisheries and Oceans regarding updates to fish habitat provisions in the *Fisheries Act*. We contributed during the public consultation period and encouraged our supporters to contribute their voices as well; engaged in discussions with DFO; and presented our suggested amendments to the Act to members of the Senate. We will continue to work with all stakeholders on improvements to the Act that will result in greater fish habitat protection in Canada.

**Improving Fish Passage**
American Eel populations have declined by 99 per cent in Ontario. In 2018, CWF continued its research and outreach project for the American Eel, which included the capture and tagging of 15 American Eels in the Ottawa River; a simulated catch-and-release study that demonstrated that American Eels are likely to shed hooks and survive following release; and continued efforts to have the American Eel listed under the *Species at Risk Act*.

The number of Chinook Salmon returning to their spawning grounds in the Yukon River has declined dramatically. In conjunction with Indigenous groups, industry and other partners, we are researching possible stressors to guide future conservation and recovery efforts. To date, 138 Chinook Salmon have been implanted with acoustic transmitters and tracked, and carcass surveys were completed in the Yukon River for a second year.

**North Atlantic Right Whale Research**
CWF is working with local fishermen to test and evaluate ropeless fishing gear that would lower the risk of whale entanglements; summarize the effectiveness of ropeless gear use by fish harvesters; and advocate for the adjustment of fishing seasons to avoid periods when Right Whales and other marine mammals are feeding in or migrating through the Atlantic waters adjacent to Canada's eastern provinces.

Photos: Getty Images

**Canadian Marine Animal Response Alliance**
Through our work leading the Canadian Marine Animal Response Alliance, Fisheries and Oceans Canada established annual funding to support regional response groups, greatly advancing Canada's capacity to respond to marine animal emergencies. CWF will help lead the development of a national disentanglement program in Canada to ensure humans and wildlife remain safe during dangerous disentanglement operations.

**Freshwater Turtle Conservation**
With the support of the Rogers Foundation, CWF continues to help the Saving Turtles at Risk Today program in partnership with Scales Nature Park in Muskoka. We also run a similar program in eastern Ontario. These efforts share three main components: protecting turtles and their nests, building community awareness and contributing to science-based conservation in Canada. Since this critical work began in 2013, over 1,700 km$^2$ of habitat has been protected; seven critical hotspots of turtle road mortality have been identified; turtle fencing has been installed in one hotspot; turtle fencing will be installed in two of the worst hotspots in 2019; and more than 15,500 turtle hatchlings have been released.

**Love Your Lake**
CWF runs Love Your Lake in partnership with Watersheds Canada. This shoreline property assessment program provides lake associations and shoreline property owners with recommendations of steps they can take to naturalize their shoreline to keep their lake healthy. The program currently runs in Ontario, Saskatchewan and Alberta and is expanding to British Columbia. In 2018, we assessed 3,240 properties on 18 lakes. Since the program began in 2013, over 37,000 properties have been assessed on 151 lakes.

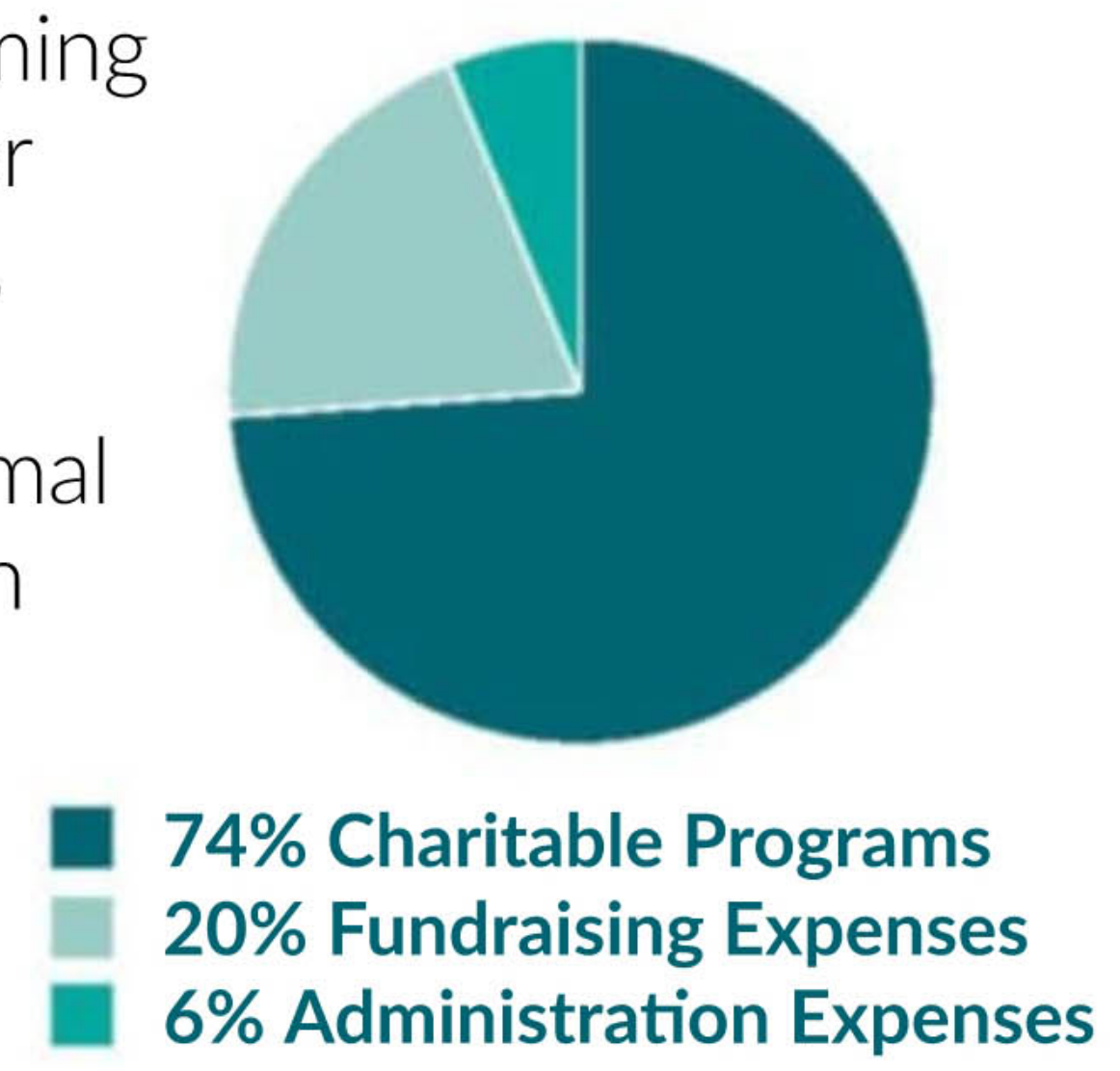
**Monarch Habitat Restoration Pilot Project**
Thanks to a grant from the Ontario Trillium Foundation, CWF launched a new Monarch Butterfly recovery project in eastern Ontario in partnership with the National Capital Commission, Hydro One and Lanark County. CWF is testing whether the creation of native meadows along roadsides and right-of-ways could successfully control Wild Parsnip while restoring Monarch Butterfly habitat and reducing management costs. As part of the pilot, we are creating learning labs to establish wildflower meadows in Ottawa and Lanark County. Work has begun to prepare the sites for the planting of native wildflower seeds.

**Pollinator Habitat and Agricultural Lands**
CWF is working to determine which habitats (forests, hedgerows or grasslands) and in what configurations on farms support the largest diversity and abundance of insect pollinator species — including not only bees, but also several families of pollinating flies. By providing farmers with this information, they will not only know which habitats are crucial to supporting pollinators, but also how much natural habitat is needed for these species to flourish on farms.

**Help the Bats**
CWF established partnerships with the bat research and conservation community, as well as with wildlife control companies. We also launched our bat house program in the Ottawa area, which is currently being converted into a citizen science monitoring and outreach project. We created a monitoring protocol for the project that uses iNaturalist.ca to collect data. Homeowners, acting as citizen scientists, can follow the protocol to report observations about their bat house. The information will be compiled along with the dimensions and specifications of the bat house to determine which bat house types and designs are most appealing to bats. HelpTheBats.ca continues to be a resource for the public to dispel myths about bats and encourage bat conservation.

**Finances**
CWF completed the 2018-19 fiscal year with a surplus of $2M and, once again, received an unqualified audit for this period. CWF efficiency ratios were within guidelines of the Canada Revenue Agency. The surplus from this year will be invested in multi-year conservation programs.

Investments in charitable programs were $16.6 million. This investment was used to strengthen programming in areas of freshwater habitat conservation, endangered species and large marine animal protection, education programming, pollinator habitat and other terrestrial conservation.



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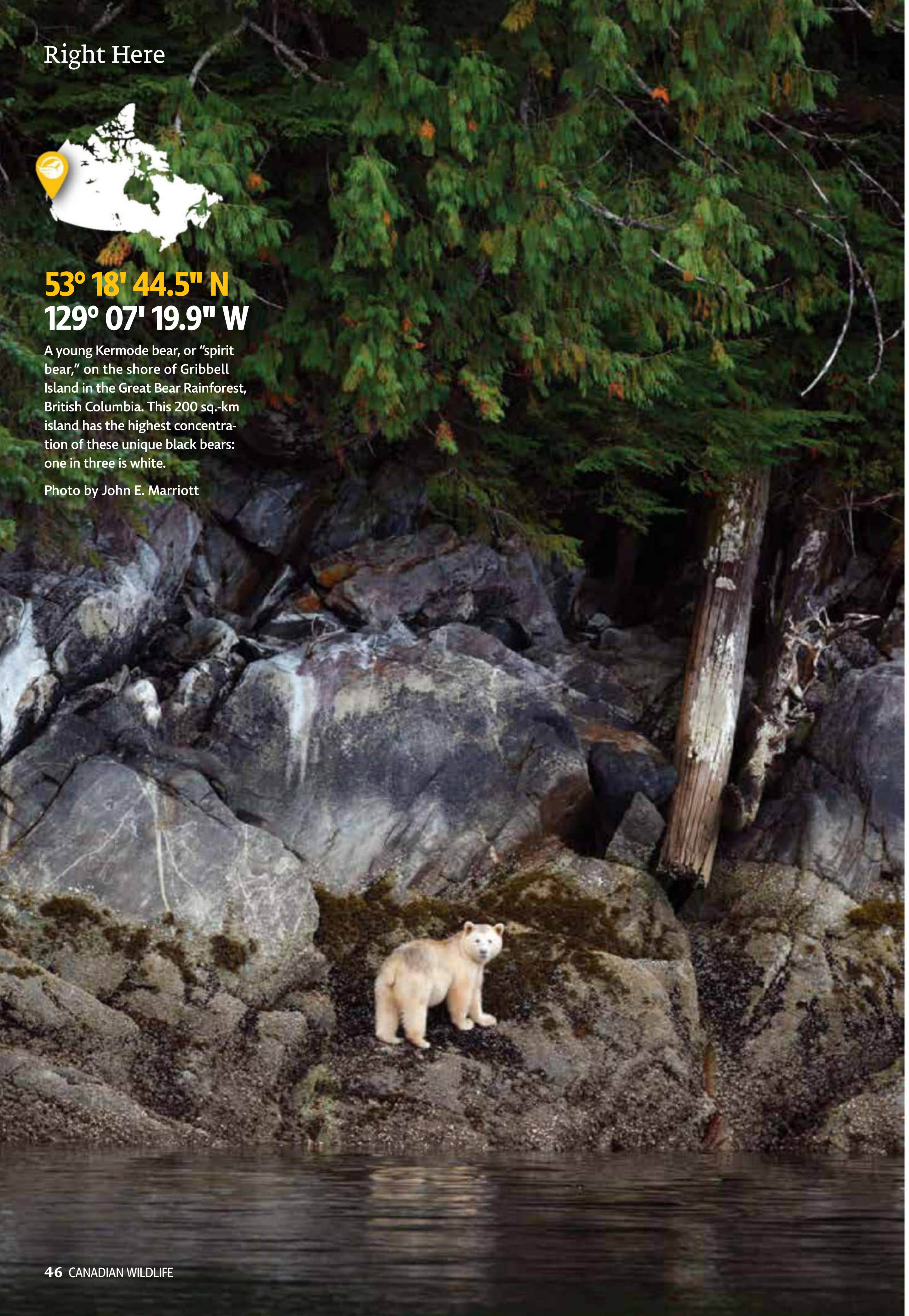

**53° 18' 44.5" N**
**129° 07' 19.9" W**

A young Kermode bear, or "spirit bear," on the shore of Gribbell Island in the Great Bear Rainforest, British Columbia. This 200 sq.-km island has the highest concentration of these unique black bears: one in three is white.

Photo by John E. Marriott

Atlantic Cod
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CANADIAN WILDLIFE FEDERATION

Canadian Wildlife Magazine's REFLECTIONS OF NATURE
2019 ANNUAL PHOTO CONTEST

canadian wildlife

BRITTANY CROSSMAN